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ORIGINAL ARTICLES.

EMBOLISM OF THE CENTRAL ARTERY OF THE RETINA, WITH THE REPORT OF THREE CASES.

Read before the Section of Ophthalmology, at the Forty-third Annual Meeting of the American Medical Association, at Detroit, Mich., June 7, 1892.

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Since 1859, when Von Graefe observed the first case in which there was almost instantaneous blindness from obstruction to the central retinal artery, until the present time, a great number of examples of this condition have been placed upon record. In 1885, Schnabel and Sachs (*Archives of Ophthalmology*, Vol. xiv, p. 298) were able to refer to 102 cases published to date, and in the years which have followed at least 32 additional instances have been added to the literature of medicine. Indeed, the entire subject has recently been reviewed in great detail in an elaborate monograph by R. Fisher, "Ueber die Embolie der Arteria Centralis Retinæ," Leipzig, 1891. In spite of these records, the explanation of certain phenomena seen in connection with this accident remains in dispute, and each new carefully observed case contains elements of interest worthy of publication, either because it places at our disposal additional facts, or because it tends to confirm former observations.

Case 1.—Embolism of the Left Central Artery of the Retina. Ophthalmoscopic Examination Twenty Minutes after the Obstruction. April 7, 1891. C. R., a man aged 26, while standing on the street conversing with a friend, without premonition, was suddenly completely blind in the left eye. The absolute character of the loss of vision is attested by the fact that after closure of his unaffected eye, he was unable to perceive the faintest ray of light from an electric lamp situated directly opposite to him. He came almost at once to my office and was examined (10:20 P.M.) twenty minutes after the occurrence. He was pale, complained of a feeling of faintness and vertigo, the pulse was 75, rather strong and bounding, and there was a coarse mitral systolic murmur transmitted to the axilla. Vision in O. D. 6/6; in O. S. *nil*. The pupils were equal in size, the left unaffected by light, but acting consensually with the other. *Ophthalmoscope.* The oval optic disc, superficially pinkish-gray in tint, but distinctly pallid in its deeper layers, was surrounded by a partially absorbed choroid ring, within which the connective tissue ring could be traced all round. The coloring of the disc was visible through a semi-transparent, delicate haze which covered its surface and spread out into the retina in a circular area of about a disc's diameter; here the color of the haze was more decidedly gray. The macular region was invested with a similar, but more milky haze, and in the centre there was a typical *cherry spot*. These two banks of fog were separated by an area of unaffected retina. The entire arterial tree had very much dwindled, the vessels being represented by faint, rosy threads on which no light reflex could be traced. There was no anomalous vessel. The shrinking of the arteries perceptibly increased during the ophthalmoscopic examination. In contrast, the veins seemed larger, although as compared with the other side, they were smaller than normal. In the lower temporal vein a moderately rapid circulation was visible, characterized by small cylinders of blood separated by clear spaces which moved towards the disc, giving very much the appearance that would be produced by mixing air and colored water in a tube. Rapid and vigorous massage of the eyeball produced no effect upon the embolus and no material change in the ophthalmoscopic appearances, and a current of blood was not developed in the arteries by this manipulation. The ophthalmoscopic examination, which lasted for ten or fifteen minutes, was abruptly terminated because the patient fainted, or at least became so faint that he could not sit upright.

April 8, 1891. The patient was seen at his house under circumstances that made a prolonged examination with the ophthalmoscope well nigh impossible. The chief change which had taken place was the deepening of the milky-white infiltration of the retina. The cherry spot remained as before, the arteries were still small, but not so small as on the previous day, and the beaded circulation in the vein had ceased. There was now faint light perception.

April 10, 1891. The disc was quite pallid, in fact, it was materially obscured by the deepened milky infiltration, the peri-papillary portion of which had joined the macular bank, so that there was no intervening layer of unaffected retina.

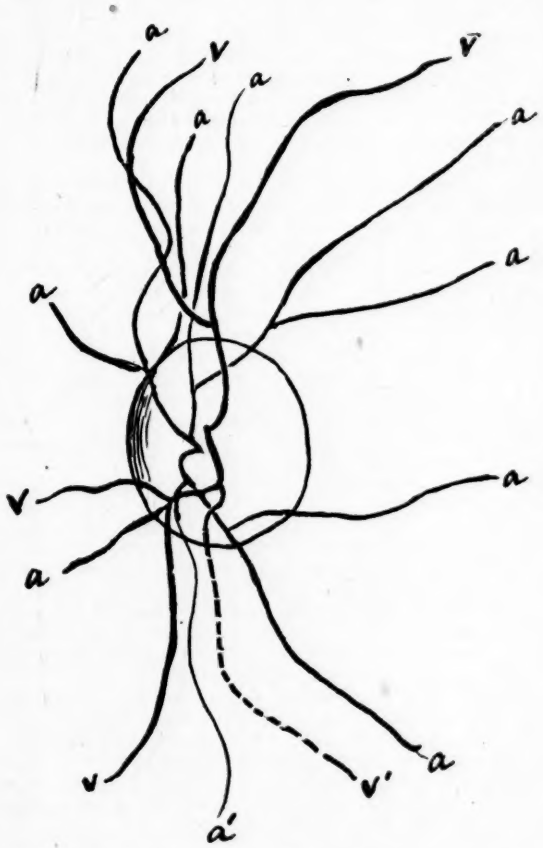

FIGURE 1.—Representing the retinal veins and arteries after the primary shrinking had given place to increase in diameter; a, artery; v, vein; a', artery which remained small; v', vein which exhibited beaded circulation. No attempt has been made to show the œdema.

April 20, 1891. The area of infiltration remained about

the same. The retinal veins were full, and of apparently normal size, while the arteries had materially increased in diameter, and, with the single exception of the inferior temporal artery (which was only a faint thread), could be traced for some distance out into the retina, but were finally lost in the foggy infiltration. (See Fig. 1.) The light perception in the centre of the field was a little more marked. The patient was not seen after this for nearly a month.

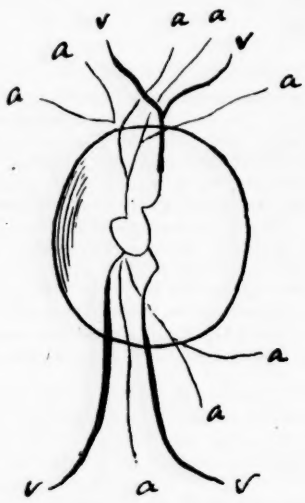

FIGURE 2.—Representing the retinal veins and arteries 35 days after the occurrence of the embolism. The arteries are mere threads, and are lost soon after crossing the disc. The veins are dark and large in contrast, except in the venous circle on the disc; a, artery; v, vein.

May 12, 1891. The oval optic disc was of a greenish pallor, entirely devoid of capillaries. All the arteries were faint threads scarcely distinguishable upon the disc, and lost entirely, or traceable only as minute whitish lines, after they had passed the margin for less than half a disc's diameter. (Fig. 2.) The veins were also shrunken, but in contrast to the arteries appeared darker than normal. The fog-like infiltration previously described had entirely disappeared, while in the macula was clustered quite a mass of cholesterin crystals. There was not the faintest ray of light perception.

Further data in regard to the clinical history of this patient and his previous cardiac conditions are contained in the following letter received from his physician, Dr. William Pepper: "The cardiac lesion in C. R.'s case evidently dates back a number of years. I was first consulted about it in 1887, when I found a marked mitral regurgitation with a strong systolic murmur and a moderate degree of hypertrophy, not more than enough to effect good compensation. This condition has continued to the present time. He has been subjected to a great deal of care and physical, mental and emotional strain. The heart has borne it fairly well. During this winter there was some increasing anæmia, with a strong tendency to rapid action of the heart and to general weakness of the system. There was also slight feverishness from time to time. This was much improved by complete rest for short periods. In the summer of 1890, when in a location quite free from malaria, he had a series of severe chills, followed by a high fever of short duration. There has been a slight return of this during the present month, May, 1891. Are these truly malarial, or can they be connected with slight points of ulceration which might favor the detachment of a fragment of vegetation? In favor of the malarial view is the fact that the chills have yielded promptly to full doses of quinine."

Some time after the embolism, or in the early summer of 1891, this patient developed a popliteal aneurism, for the cure of which he finally underwent the operation of ligation of the femoral. Afterwards an aneurism appeared in the course of the brachial artery. Preceding the development of these aneurisms, he had an attack of rheumatic fever, or at least an attack which was thus diagnosticated.

Remarks.—The sudden onset of the blindness, the classical symptoms of acute anæmia of the retina from obstruction of the central artery, and the cardiac and vascular disease in this patient, render it more than probable that the lesion was an embolus. Some interest attaches to the opportunity of observing the ophthalmoscopic changes so soon after the lodgment of the obstructing body. The picture did not materially differ from that which has often been described, but it is interesting to note how rapidly the œdematous change may occur in the retina after it has been deprived of its blood supply. The formation of two areas of infiltration separated by a band of comparatively unaffected tissue, is not readily explained, unless it be assumed that this region was not deprived of its blood supply.

The second point of interest in this case is one that has been noted in other instances, namely, that although the primary effect was to obliterate vision absolutely, and that at first the retinal arteries dwindled away to mere threads, after a time, beginning about seventeen hours after the lodgment of the embolus, the arteries increased in size, and so long as twelve days afterwards, with the exception of the inferior temporal artery, remained of considerable magnitude. During this period of the increase in the size of the vessels, there was faint light perception; in fact, on the day immediately following the accident, the patient declared that he could tell an object passed in front of his eye. Gradually, however, this return of sight disappeared, the arteries shrank, and the eye became absolutely blind.

Schnabel and Sachs have dwelt considerably upon this point, and enforced their observations with one autopsy. According to them, after a *partial* embolism of the trunk of the central artery, there are two causes which interrupt the circulation: one is the embolus itself, and the other is the spasmodic contraction of the walls of the artery. The latter gradually disappears, and then the vessels become filled again without there having been any change in the character of the embolus itself. The ultimate deterioration of vision, or its complete loss, depends upon the fact that there is no change in the position of the embolus. These observers believe that there is only one symptom which will decide whether an embolus partially or completely obstructs the flow of blood. It is partial if there is fulness of the vessels, or if there is circulation of the blood as indicated by the movement of the blood in the right direction seen after the embolism has occurred. The presence or absence of vision is of secondary importance in this respect.

Case 2.—Embolism of the Right Central Artery of the Retina. Examination Five Months after the Accident. Partial Preservation of the Temporal Field of Vision. S. H., a man aged 72 years, presented himself for examination October 22, 1890, with the following history: In May, 1890, when feeling perfectly well, with no premonitory symptoms, and while standing at his dressing case in the morning, he suddenly appreciated that the sight of the right eye was blotted out. No exact data are at hand from which to decide the completeness of the loss of vision, but from his own account and from that of his most intelligent family physician, it is probable, for many hours at least, that the obliteration was absolute. No one was at hand to make an ophthalmoscopic examination, but the patient was put to bed, purged, given sedatives, and his temple was leeched. After a time he began to see slightly, but did not find it convenient to consult any one until the date just mentioned.

He had always been a healthy man until about the time of the embolus, when his doctor discovered some sugar in the urine. This appears to have been a temporary condition, and when I examined him there was neither sugar, albumin, nor tube casts. There was high arterial tension; the temporal and radial arteries were distinctly hard to the touch. There was no increase in the area of cardiac

dulness; the first sound was somewhat muffled and the second sound clanging. There was no murmur.

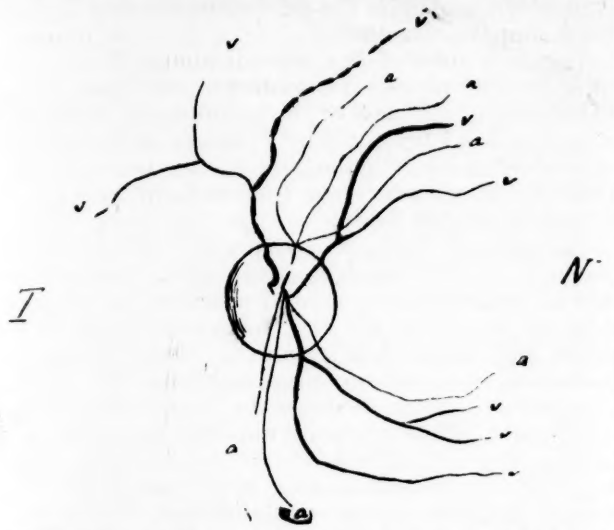

FIGURE 3.—a, artery; v, vein; v', beaded vein. A diagrammatic sketch. No vessel passes to the temporal side, and fine, transverse branches are absent. T, temporal side; N, nasal side.

Ophthalmoscope. The optic disc was nearly round, entirely atrophic, being of a greenish-white color. The arteries, where they could be traced, were mere threads, and none could be followed to the temporal side. The veins in contrast were dark, and the upper temporal vein, or at least the main branch of it, was beaded, dark, well filled portions being divided from each other by entirely collapsed areas. The finer tranverse branches could not be seen anywhere. (Fig. 3.) The vision in this eye consisted in object perception in the temporal portion of the field. In the left eye the vision, after correction of a slight astigmatism against the rule, was 6/6. There were faint opacities in the anterior cortex of the lens, an oval, normally colored optic disc, and no changes in the central circulation.

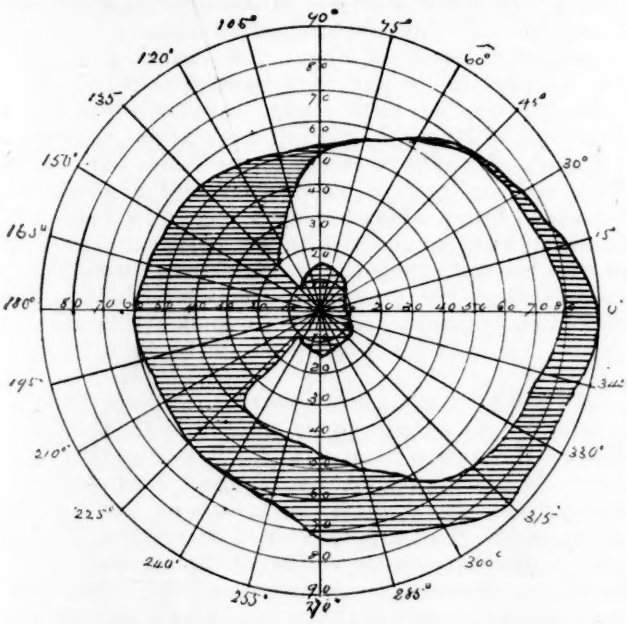

FIGURE 4.—Diagram of the field of vision of Case 2. The shaded area represents where vision was lost; the unshaded area, where there was preservation of form-sense.

The field of vision of the affected eye is represented in the diagram. (Fig. 4.) The shaded portion indicates the area in which vision was lost and the white portion the preserved field.

It will thus be seen that the greater portion of the nasal field is wanting, and that the centre of the field of vision is sharply cut out by an area thirty degrees in its long diameter, which on the nasal side joins the general obliteration of the inner portion of the field of vision. In the area of preserved vision light-sense and form-sense remained; color-sense was wanting.

Remarks.—The case which follows has many features analogous to those in the one just reported; indeed, it may be looked upon as a study of the symptoms which were probably present in the early stage of the affection in Case 2. For this reason I will defer the remarks until I have quoted Case 3.

Case 3.—Embolism of the Left Central Artery of the Retina. Examination Fifteen Hours after the Accident. Preservation of a Small Patch of the Temporal Field. Mrs. E. E., aged 66, presented herself for examination May 1, 1892, at about 2 o'clock in the afternoon. Fifteen hours before she appreciated that she had suddenly become blind in the left eye. There was a slight aura preceding the extinguishment of sight, characterized by what the patient called a "glimmering before the eye", probably some form of photopsy. The patient was in good health, had suffered no recent illness, but had done a good deal of stooping on the previous day, particularly in the act of gardening.

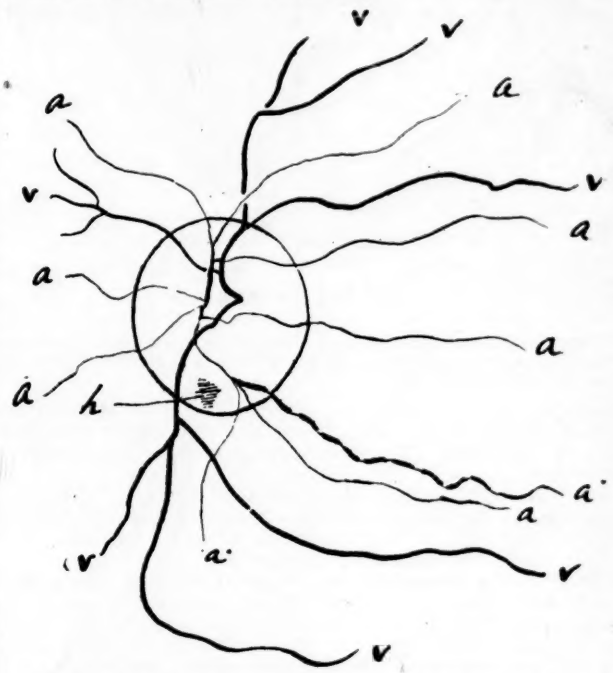

FIGURE 5.—v, veins; a, artery; a', beaded artery, carrying blood of darker color than that in the other branches, and resembling a vein; h, hæmorrhage in the disc.

When examined the vision amounted to faint light perception in a small area of the temporal half of the field. The optic disc was oval, distinctly gray or gray-red in color; all of the arteries were subnormal in size, but of a fairly normal color, with the single exception of a large branch of the inferior temporal artery, which, from its point of origin from the main trunk near the lower margin of the disc, as far as it could be followed in its curve along the lower temporal retina, was beaded, and appeared as if a series of constrictions had been placed around it. Moreover, in contrast to all of the other arteries, it carried much more darkly colored blood, so much so that at the first examination it was thought to be a vein. (Fig. 5.) There was a faint milky haze, most marked between the macula and the disc, and the fovea was represented by a dull, brownish-red spot showing through the fog. There was a small hæmorrhage on the disc lying between the inferior temporal artery and vein.

May 2, 1892. A careful map of the field of vision was obtained with the result which is exhibited in the diagram. (Fig. 6.) It will be observed that a small patch remains upon the temporal side, and that the centre of the field of vision is sharply cut out, in fact, that the general appearance of the map is closely similar to the one obtained in the previous case. In the area of preserved field light-sense remained, but form-sense and color-sense were absent. The ophthalmoscopic appearances were about the same as on the previous day.

May 16, 1892. It is unnecessary to give the daily record of the ophthalmoscopic appearances in this case; suffice it to say that gradually the haze disappeared and the disc became more and more atrophic. Today the following note was made: Disc uniformly gray and devoid of finer capillaries; only one small macular branch visible and one small vessel on the nasal side of the papilla; the veins are about the same size as the arteries, in fact, the upper temporal

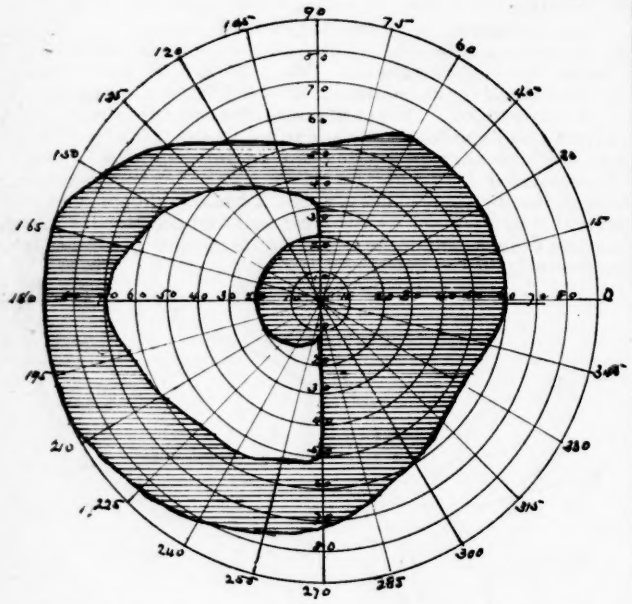

FIGURE 6.—Diagram of the field of vision in Case 3. The shaded area represents where vision was lost; the unshaded area, where there was preservation of light-sense.

veins are smaller than the arteries, but both systems are diminished in size. The beading of the lower temporal artery continues. The hæmorrhage on the disc has been absorbed.

May 24, 1892. Still greater atrophy of the disc. The upper temporal artery for about a disc's diameter above the papilla is obliterated, and then continues as a fine thread. The other vessels are about the same.

The family physician, Dr. James B. Walker, has kindly reported upon the condition of the heart as follows: An enlarged left ventricle, with atheromatous vessels, but without marked valvular lesion. The urine, of a specific gravity of 1022, was free from albumin and sugar. At the last visit, on May 24, the preservation of the small patch of vision upon the temporal side continued.

Remarks.—In Case 2 the diagnosis of embolism, in contradistinction to thrombosis of the artery, is not quite so clear as in the first case which was reported, but may fairly be assumed to have been the lesion on account of the absence of a previous attack of temporary blindness in the affected eye, a simultaneous attack of temporary blindness in the unaffected eye, and giddiness, faintness, or vertigo—symptoms which Priestly Smith has taught to be somewhat diagnostic of thrombosis. In addition to the curiously constricted appearance of the upper temporal vein, the interesting feature of this case resides in the map of the field of vision, and the preservation of an area upon the temporal side in which form-sense remained.

In Case 3 there is some question between embolism and thrombosis, as the patient's general condition was such that the latter lesion might readily have formed. However, the usual ophthalmoscopic signs of embolism were present, and those which have been supposed to indicate thrombosis were absent. Small hæmorrhages along the course of the vessels have been noted in embolism; indeed, in one instance recorded by Knapp (*Archives of Ophthalmology and Otology*, Vol. I) there was extensive infarctus. A hæmorrhage upon the surface of the disc is, perhaps, more uncommon.

The dark color of the inferior temporal artery, so that the hue resembled that of venous blood, probably indicated slowness of the circulation. This phenomenon has been noted by V. Jaeger, Schneller, and is referred to by Schnabel and Sachs. In Schneller's case the arteries for some time had the appearance of narrow retinal veins.

The chart of the field of vision in this case closely resembles that of the former example. In each there was an almost exactly similar patch of the temporal field, in which in the one, form-sense, and in the other, light-sense was retained. In a number of instances of embolism, presumably of the central trunk of the artery, an eccentric (temporal) patch of the visual field has remained unobliterated, moreover, in the absence of any visible cilio-retinal vessel. Fischer, who discusses this phenomenon at some length, suggests several explanations. In his own patient, a portion of the retina which surrounded the papilla like a girdle retained its sensitiveness to light, and, according to this author, owed this preservation of function to a slight blood supply from ciliary vessels through the smallest cilio-retinal branches. It is possible the same explanation is applicable to cases in which the area of retained vision (light-sense or form-sense) occupied a larger portion of the nasal retina and caused the partial preservation of the temporal field.

Another explanation, discussed by Fischer, is that the diminished flow of blood in the central vessels after embolism is less marked in the areas near the papilla than in the more remote sections of the retina. In other words, it is assumed that all portions of the retina do not suffer equally from the diminished supply of blood, and that a portion of the nasal retina in part retains its functions. In a case of so-called hæmorrhage into the optic nerve observed by Magnus, fourteen days after the sudden blindness the patient began to see to the outer side. The exterior half of the retina and the macula remained blind. Magnus considered this condition of differential diagnostic import between embolism of the central artery of the retina and hæmorrhage into the optic nerve, and on the strength of it excluded embolism. Fischer, who quotes this case, is not in accord with Magnus as to the value of this point.

In Case 3, there was no apparent difference in size of the vessels passing to the nasal and the temporal side of the retina to account for the retention of a patch of functionally active retina. In Case 2, no small transverse branch was to be seen, and no vessel passed to the temporal side of the retina. Probably, as Fischer admits, neither of the theories which have been suggested is satisfactory, and we are not in position to explain the reason why a part of the nasal retina retains, partially at least, its function. Evidently, in some manner the blood supply of this portion of the retina is not so decidedly obliterated as elsewhere, or else by a collateral circulation it receives nourishment, although in an imperfect manner.

Discussion.

Dr. Edward Jackson, Philadelphia:—As bearing upon the question of embolism or thrombosis, I have in mind a case

in which the history pointed toward the latter. A young man otherwise apparently healthy, gave a clear history of repeated attacks of impairment of vision in the affected eye. These attacks had occurred for some years, at first at long intervals, then more frequently. The final attack occurred on a Sunday morning while he was reading the newspaper. He said the sensation was exactly similar to that experienced on former occasions. He stopped reading and sat for a few minutes waiting for it to pass off but the trouble did not pass off; and instead, vision rapidly grew worse until light perception was lost. I saw him twenty-two hours after the occurrence of the trouble. Light perception was then entirely lost. Œdema of the retina was very marked. The margins of the disc were obscured and the retinal veins contracted irregularly. There was no movement of the column of blood. The arteries were not materially altered in appearance. The patient subsequently remained in good health until the occurrence of an attack of typhoid fever from which he died.

As bearing upon a point in reference to Dr. Ayres' case, I have in mind a case which came to me last November with extensive hæmorrhage in the region of the macula and a second hæmorrhage in the neighborhood of the optic disc, neither causing complete loss of light perception. They had occurred without any apparent predisposing cause. The patient was inclined to ascribe the occurrence to exposure to tobacco smoke, which he never could stand. He had been in a room filled with smoke until he suffered from great nausea and discomfort, but had not vomited. He went on the street and coming to a street lamp noticed something wrong with the sight. There has been almost complete recovery with no recurrence of the hæmorrhage in six months, and the man is perfectly healthy in all respects, so far as can be judged by repeated careful examinations.

Dr. S. C. Ayers, Cincinnati:—A curious thing is that so many cases of embolism or thrombosis occur in the morning. Many patients wake up and find the eye blind. This was the case in the three instances which I have reported. I am certain that we have some cases of genuine embolism from the fact that the arteries remain permanently obliterated. In regard to the case reported, I am sure that it could not be embolism. What it was, unless thrombosis with temporary obstruction, I do not know.

"IMPURE" PARETIC DEMENTIA AND ITS FORENSIC RELATIONS.

Read in the Section of Neurology and Medical Jurisprudence, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY JAS. G. KIERNAN, M.D.,

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Many European and some American alienists have drawn the line between insanity attacking an intact organization and attacking one already disordered by heredity or disease. What is true of insanity is also true of paretic dementia. This certainly becomes tinctured with certain features according to the organization it attacks. The organization attacked, may already be the victim of a constitutional disease like phthisis in which case the emotional exaltation of the spes phthisica becomes exaggerated with the emotional state of true paretic dementia, permeated, however, by a suspicional phase. The claim has been made that these are not paretic dementia plus the individual defect, but new types of the paretic dementia. Fournier, for example, went so far as to claim that syphilis produced a pseudo-paretic dementia. I have already shown that exceedingly valid grounds exist for refusing to admit the existence of such a type.[1] Bonnet[2] has recently has recently sustained my position in a memoir crowned by the French Medico-Psychological Association.[3]

Regis has gone even further than Fournier, for he claims that beside the type of paretic dementia which becomes developed in its own time, and which is the true paretic dementia, there are other cases which occur unexpectedly, some time before, others after the ordinary period, which may be said to range between the ages of twenty-five and sixty-five years. The first may be designated as premature paretic dementia, the second as late paretic dementia. Cases before the age of twenty-five years, are very rare, and only a few cases are recorded coming on before the age of twenty. The premature type, unlike the ordinary type, has always a powerful etiological factor, such as heredity, syphilis, traumatism, saturnism, or general or local diathesis. These causes appear to determine in these cases an early predisposition, and prematurely to place the brain in those conditions in which it is found in mature life. Premature paretic dementia has a slower progress and a longer duration; it is more frequently subject to remissions, and is susceptible of a more or less permanent cure. To the designation premature and to the positiveness of the position here taken, I have elsewhere[4] shown that most decided objections exist. The symptoms which Regis has grouped under this title may appear at any age, and are due to the organism attacked. A careful examination which I made of the subject some years demonstrated ago to me,[5] that this was the true explanation of the facts cited by Regis in support of his position. Whatever be the etiological factor, the organism attacked tinges the paretic dementia, and not the etiological factor. The normal organization furnishes the typical paretic dement. The organism in which a neurosis has been set up by phthisis, lues, gout, rheumatism, traumatism, lead-poisoning, insolation, heredity, ataxia or other causes, furnishes atypical cases of paretic dementia presenting many features in common.

Klippell[6] claims that among the arthritics, as among other diathesitics, types of paretic dementia may occur; pure paretic dementia, paretic dementia with complicatory neuroses, and finally the pseudo-paretic dementia found in diathesitic conditions.

These atypical cases simulate those of other psychoses at various times during their progress.

Foville[7] states for example that, during the last few years, cases of paretic dementia have been noticed in which delusional states added to muscular agitation assumed alternately the form of maniacal exaltation and melancholic depression, and it has been proposed to class these as paretic dementia a double form. The chance of error that we most often meet with, is the possibility of confounding the period of excitement of circular insanity, with the beginning of the expansive period of paretic dementia. The resemblance may be very great, both as regard bodily and mental symptoms. When intellectual disorder is added to the maniacal exaltation of circular insanity, it frequently assumes the form of the grandiose delusions so frequent in paretic dements. Even when there is no delusion properly so called, the resemblance may be very great. The mind deranged with enterprises, the opinion of self in the intellectual, artistic and poetical domain, exaggerated; the optimism generalized,

[1] Alienist and Neurologist, 1883.
[2] Ann. Medico-Psych., 1891.
[3] Archives de Neurologie, 1882.
[4] Amer. Lancet, Vol. VII.
[5] Alienist and Neurologist, 1883.
[6] Revue de Medicine, 1892.
[7] Brain, Oct., 1882.

in a word accompanied by impulses to theft, to excesses of all kinds, to the most compromising actions, might produce the appearance in the two psychoses of almost identical characteristics. It is well known, that certain paretic dements at the onset of the excitement may not present any speech or motor disorder. On the other hand, in certain cases of circular insanity, the close connection between the emotions and the cerebral activity may impart to the speech a degree of tremulousness, very difficult to distinguish from that of paretic dementia. Finally, as Falret has shown, in a few cases of circular insanity, pupillary derangements, apoplectiform and epileptiform attacks have been noticed.

A pyschic element of great value would be the inception of dementia which is common enough at the onset of paretic dementia to be considered constant. But this is often so disguised in consequence of the general state of excitement, that it is almost impossible to ascertain its existence.

Regis[8] thinks he has found a criterion in the nature of the patient's feelings. He claims that the paretic dement is really kind-hearted, generous and even prodigal, desirous of being agreeable to everybody, and spreading around him the treasures of a common benevolence. The patient suffering from circular insanity, is wicked above everything, cantankerous, ironical and clever in injuring everybody. We are far from denying this is often so, but we have known paretic dements, who were caustic and mischievous, and patients suffering from circular insanity, who are generous and beneficient.

Gilles claims,[9] that circular paretic dementia bears the same relation to circular insanity, that exalted and depressed periods of paretic dementia do to mania an dmelancholia; circular paretic dementia is especially frequent in hereditary cases. The remissions occur with great suddenness and apparent completeness. In the depressed state intellectual and organic failure with trophic disorders occur, in the expansive period, temporary amelioration is likely to appear, eschars, congestive attacks, the menstrual period and acute diseases form the transition of one phase into another. Circular paretic dementia may appear suddenly after one or two attacks of simple insanity, or in the course of true circular insanity.

The alternating type is most frequent. The duration of the psychosis is longer than the ordinary type of paretic dementia.

How difficult the diagnosis between circular paretic dementia and circular insanity is, may be judged from one of my cases. A patient who has a strong hereditary taint, is regarded by me as a paretic dement, and by so excellent alienists as Drs. Dewey and Bannister, as a circular lunatic.

The types of paretic dementia due to lues, traumatism, insolation, phthisis, lead poisoning, heredity, etc., but particularly the hereditary types, are exceedingly likely to assume this circular character.

The rheumatic and gouty types have prolonged remissions, which may, as Spitzka, Regis and myself have observed, pass into recoveries. In my experience, the other types do not recover as Regis claims, but there is a long-lasting querulent, paralucid condition, in which the patient while retaining to a limited degree his former exalted opinion of himself conceals this under resentment evinced in lawsuits or fault finding. The exalted opinion is often the result of a delusion of memory. The same is true of the depressional delusions, which are sometimes so thus retained, as to affect business transactions. One of my patients with decided hereditary stigmata, was attacked by paretic dementia. His periods of exaltation and depression alternated twice or thrice and disappeared, leaving a paralucid querulent pessimistic state. He has an inward conviction, from what were evidently memory delusions based on this former depression, that every thing was going to go wrong with his business. Under the influence of this state he sold out some stock which, by a "bear" movement induced by a lawsuit, had been forced down in value. This law-suit and the resultant "bear" movement, had been foreseen by him when he purchased the stock. The stock rose above par within a week after he sold it. The remission gave place to a period of depression, followed by one of emotional exaltation during which he was committed to an insane hospital. Suit was brought by his conservator to annul the sale of the stock. The jury under the instructions of the court decided that the sale should stand. This decision was in full accord with repeated decisions of the Illinois and Iowa Supreme Courts, which held that persons of unsound mind are to be held bound by an executed contract or conveyance where the transaction is fair and reasonable, and in the ordinary course of business, and where the mental condition of the party is unknown to the second part, and the parties cannot be placed in status quo ante.

In another case with hereditary taint, complicated with lues, there occurred periods of paralucid querulency, emotional depression, and exaltation. The patient previous to the demonstrable onset of the paretic dementia had contracted to have two houses built. The contractor, after making several sub-contracts, failed. The sub-contractors demanded payment of the paretic for work which the contractor had been previously paid. This was refused. The patient was sent to an insane hospital, whence he was discharged in a paralucid querulent interval. Despite my advice to the contrary, he was placed in charge of his property. In a short time he verbally agreed to pay the contractors their bills. Owing to a new period of exaltation requiring hospital treatment, these promises were not fulfilled, whereupon suit was brought. The jury decided for the plaintiffs for the same reason as in the previous case.

These impure types are hence of peculiar forensic interest, since they nullify the ordinary prognosis as to the duration of remissions in paretic dementia and of the disease itself.

A prominent clinical feature of these cases is the temperature. Rottenbiller[10] has found the paretic temperature is subnormal, and that extraordinary daily variations, without apparent cause, are frequent (in one case the temperature rose from 97 F. in the morning to 102.6 F. in the evening, and fell again to 88 F. the next morning); these characteristics are present in the early stages of the disease and in remissions.

This in my experience has been almost exclusively the case with the premature paretic dements. In these, the asymmetrical axillary temperature to which I called attention[11] about a decade and a half ago is peculiarly frequent.

[8] L' Encephale, 1881.
[9] Medical Standard, June, 1892.
[10] Allge. Zeitschrift f. Psych., 1885.
[11] Jour. Nerv. and Mental Disease, 1878.

Regis has sufficiently albeit too strongly covered the point of age. The luetic, gouty, rheumatic, traumatic and hereditary types occur at any age. The luetic cases resulting after the age of 65, are of rather long duration. In three such cases, the patient reached the age of 73, but each resided the whole period in an insane hospital. In three hereditary cases, occurring after 65 (one male, two females), of less duration (6 years); three sons were also afflicted at from 17 to 23 with paretic dementia. The sons died ere their parents from intercurrent complication due to trophic changes: the spinal symptoms were especially predominant. In epileptics who became paretic dements at the climacteric period the psychosis ran its usual course, and rarely lasted three years after its onset. In ataxics however, the remissions were frequent and protracted, but querulency existed.

The Hebrew race, as Spitzka[12] several years ago pointed out, seems to be peculiarly liable to this type. Heredity and lues prepare the soil which this psychosis attacks. Pure paretic dementia is, in my experience, rare with Hebrews.[13]

The forensic results of this type of paretic dementia, have already been shown. This psychosis constitutes at times no little financial danger to communities from the precipitation of panics.

DISCUSSION OF ELECTRICAL EXECUTION.

Read in the Section of Neurology and Medical Jurisprudence, at the Forty-third annual meeting of the American Medical Association, held in Detroit, Mich., June, 1892.

BY A. D. ROCKWELL, M.D.,
OF NEW YORK.

While I do not believe that the best use to which a man can be put is to kill him, yet all will agree that if the law will kill, let it kill decently. It is evident that the sentiment against hanging and in favor of some method quicker and less repulsive is strengthening and that other methods will sooner or later replace the rope everywhere. Mr. Edison while in Paris during the exposition gave his opinion so positively in regard to the efficiency of electricity that the medical section of the French Academy of Sciences aided by Marcel Duprez, a prominent electrician, have had the matter under careful investigation. There is always opposition and friction attending changes for the better, and this change has been no exception to the general rule. The whole tendency of our civilization is, however, in the direction of humane methods in dealing with criminals and that form of execution which is quickest and least repulsive should be adopted. It is a mathematical impossibility that any human being receiving in proper form a electrical current of lethal energy should appreciate even for a fraction of a second the slightest pain. It has been ascertained that the brain is one-twenty-fifth of a second in recognizing an impression, and one-twenty-eighth of a second in telegraphing that an impression has been received, and as nerve force travels only about 100 feet a second, while the velocity of the electric current is millions of times greater than this, the brain has absolutely no time to appreciate a sense of pain. As between electricity and certain other methods of capital punishment, it is not altogether clear that the former is the best that could be suggested. The guillotine and the garote are practically instantaneous and painless in their action and attended with only a fraction of the paraphernalia and expense of the method now adopted in New York State. There is, however, an apparent brutality attending both these methods that repels, and a mutilation and shedding of blood, which public opinion in this country seems unwilling to tolerate.

The action of poison is open to none of these objections, and it seems somewhat singular that it has not more strongly commended itself to the philanthropic mind seeking simpler and more humane methods in the legal taking of human life. But as between electricity and the rope there can, it seems to me, be no question. Let us suppose that it had been customary to execute by electricity instead of by hanging, and that some one in the supposed interests of humanity should suggest that the former method be abolished, and the latter substituted; that a method practically instantaneous and painless, unattended by mutilation and without any distressing outward manifestations of pain, be replaced by one which usually fails to extinguish life for ten or twelve minutes, which in many cases it is reasonable to believe is attended with torture, and where the convulsive manifestations are horrible to witness—such a suggestion could not have the slightest claim for serious consideration, and as a matter of fact would never be offered.

After the passage by the legislature of the State of New York, of the law substituting electricity for hanging in the execution of criminals, there arose a terrible storm of opposition that apparently had for its basis extensive commercial interests. It was claimed by the opponents of the new method, that electricity was by no means certain to destroy life without the infliction of great pain, and the popular mind was agitated by repeated assertions of the possibility and probability of repulsive disfigurement by the heat and chemical action that would necessarily be developed in the use of currents of such great power. To determine these points and to advise the State as to the best methods of procedure, a commission was appointed consisting of Dr. Charles Mac Donald, Chairman of the State Commission in Lunacy, Prof. L. H. Laudy of Columbia College, and the writer, who both at the Edison Laboratory and at the various prisons of the State, experimented largely upon animals, and tested many devices and methods for the application of the current. There could be no charge of cruelty in these investigations for in no single instance was there any evidence that the slightest pain was inflicted.

The largest animals, such as horses and a bull, instantly succumbed to an electric pressure of one thousand volts, while dogs and calves were as readily destroyed by five and six hundred volts.

But one impact of the current was found necessary, for death was instantaneous in every case.

Immediate examination after the opening of the circuit invariably failed to elicit the slightest respiration or heart beat, and careful and persistent efforts at artificial respiration conducted by Dr. Fell of Buffalo with the latest and most approved appliances were without avail.

In view of the fact thus satisfactorily demonstrated that one thousand or at the most fifteen hundred volts would instantly kill any animal large or small, we very naturally inferred that any human being

[12] Jour. of Nerv. and Mental Disease, 1880.
[13] Review of Insanity and Nervous Diseases, Vol. II.

would succumb even more readily, but to make assurance doubly sure, it was recommended that not less than 1,500 or 2,000 volts be employed in the execution of criminals. To our great surprise therefore it was demonstrated at the first electrical execution, and confirmed in every subsequent attempt, that it was far more difficult to kill a man by electricity than any ordinary domestic animal however large. In the only execution which the writer attended, when four criminals were successively subjected to the electric stroke, the first contact of twenty seconds with a voltage of 1700 left its victim apparently lifeless with the exception of a slight fluttering of the pulse and what appeared to be a slight expiratory effort.

Because of these faint evidences of vitality it was decided then, and has been customary since to repeat the shock once and sometimes twice. That the victims were, however, in every instance so thoroughly devitalized by the first shock as to preclude the possibility of resuscitation, and that every vestige of consciousness was instantly obliterated, admitted of not the shadow of a doubt. In these cases a man's brain acts in two ways, and I should say that the reasons for this increased strength of current necessary in the case of a human being were both psychical and physical. In the first place, the man knows what is coming, and every nerve and muscle is tense with involuntary resistance. There is a mysterious likeness between nervous force and electric force; not a resemblance exactly, but a something about each which science has yet to fathom.

I have no doubt that this nervous tension operates directly to impede the action of the electricity, while the secondary effect is physical. The body conducts electricity by virtue of its saline solutions.

Now fright drives the blood away from the surface to the central portions of the body.

When a man is placed in the chair he is necessarily terribly frightened, and the result is that the surface tissues are unnaturally dry, and hence inferior conductors. With an animal these influences do not prevail, but the most striking confirmation of the probable truth of this suggestion lies in the fact of the greater readiness with which life is extinguished in men from accidental contact with electrical energy.

Even where the contact has been incomplete and imperfect, linemen have been instantly killed with electrical potentials no greater than those employed in judicial executions. When a man thus accidentally comes in contact with the current, his will or nervous force is in a passive state and offers no resistance to the action of the current, while the surface of the body is usually flushed with the exertion of work, and in the highest state of conductivity. Notwithstanding the efforts of a united press to exaggerate results, no one who has once witnessed a properly conducted execution by electricity can fail to commend it as a most humane method as compared to hanging. Aside from the fact that a human life is being taken by violence, there is little in connection with the execution that is revolting to the senses. After the first convulsive movement as the current is received, every muscle is simply tense and motionless until the current is broken, when relaxation takes place and the man is to all intents dead.

It will be recollected that the press raised a great outcry against the use of electricity, not only because of its supposed inefficiency, but because of what was described as repulsive mutilation by burns and scalds. While the degree of heat generated, and the influence exerted upon the superficial tissues, varied in the different cases, according to the position of the electrodes and the density of the current near the points of contact, in no instance was there any such repulsive disfigurement as has been intimated, and in all but one or two the effects produced were so superficial and slight as to be unworthy of comment. It cannot be denied, however, that owing to the limited area through which the tremendous voltage required has to operate, and the immense resistance offered to its passage, there occurs a remarkable drop in potential and an astonishing development of heat, which without the exercise of the most intelligent and careful supervision might result in such severe burning as to bring under public condemnation a method which thus far commended itself to all eye witnesses.

But it is not voltage alone that kills, but its rate of expenditure in the body as expressed by ampères, and the time consumed in its expenditure as expressed by the volt ampère seconds indicating the measure of the heat developed during the action of the current. As stated by the distinguished electrical expert, W. J. Jenks, "none of these factors are well settled as yet in their relation to the energy actually required to cause instant and painless death. By death, I mean now not alone cessation of consciousness of a perfectly healthy human being in an interval too brief for thought to measure, and the establishment of conditions which produce gradual and final expenditure of the stored nervous energy of the brain and the subordinate centers of distribution of vital force—such as the pneumogastric nerve and the spinal cord. I mean also, total paralysis of all the vital organs, and of the nervous centers by which they are directly or indirectly vitalized, and by which the muscles of the extremities are actuated, so that when the current is broken there can be no reflex action of the muscles, such as would indicate the presence of residual life energy, or a possibility of its resuscitation."

The question which physicists must determine is how with a comparatively low voltage the same number of ampères that are expended upon the periphery and therefore in a measure lost, could be made to act exclusively on the centers of life and nervous activity, instantly devitalizing them, while leaving no outward manifestation of the terrific power employed.

It has been asserted that the subject of executions by electricity is one with which the physician should have nothing to do, and vigorous protests have been made against the propriety of allowing the subject of legal executions to be discussed in our medical societies.

In arguing that the function of the physician is to save life and not to be in any way connected with devices that destroy—it is forgotten that in one of the departments of our art, our noblest efforts are enlisted in taking, for the purpose of saving life; and when death is inevitable the physician is at hand to soften the transition from visible time to invisible eternity. When the law, therefore, decides that some new and better method be adopted in the disposition of those against whom its heaviest penalty

has been decreed, who but the educated physician is to decide upon the humanity of such change, and who but he should be selected to advise the State as to the proper technical methods of procedure.

Whatever is worthy in action is proper in discussion, and as one of the advisory commission, appointed by my State, in the interests of the best methods of execution by electricity, I have felt that our work was never along more truly professional lines, or more in the interests of humanity.

ELECTRODES, AND THEIR APPLICATION IN ELECTROCUTION.

Read in the Section of Neurology and Medical Jurisprudence, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY GEO. E. FELL, M.D., F.R.M.S.,
OF BUFFALO, N. Y.

So long as the death penalty is regarded by the law as a necessity, so long will electrocution be the most humane method of executing it. This statement is made only after the most careful observation, extending some years over this inquiry, and after having witnessed the execution of William Kemmler and Joseph L. Tice at Auburn, N. Y. The term "humane" in this connection has a wider application than is generally considered. In the execution of the death penalty, the carrying out of the saddest mandate the law requires of its officers, the sense of *duty* has nerved them to their work. Even should they feel that the law may be overstepping its bounds in taking human life, it must be conceded that for the good of the greatest number its behests must be carried out. It should be remembered that the ends of legal justice are usually reached by slow processes; that malice is not a factor in any proper judicial decision, but justice mainly, when the decisions are reached through honest legal process. These facts should and do go a great way towards supporting the executive officer in the discharge of the most trying ordeal which an officer is called upon to perform. Humanitarian factors in the execution of the death penalty enter not only into the effect upon the culprit, in the prevention of physical or mental suffering, but also to a marked extent upon the immediate executors of the law. Electrocution when properly carried out offers the readiest, least troublesome of preparation, least horrible and most humane method of carrying out the death penalty. While the results of the application of this method have heretofore demonstrated these statements to be true, as compared with other known methods, there is yet, I believe, chance for improvement in the methods utilized, so far as the application, at least, of the electrodes is concerned.

The electrodes first suggested, in the Harold P. Brown chair, which was described in the Kemmler inquiry, consisted of a sponge adjusted upon a plate of copper to fit upon the sole of each foot of the culprit, this forming a double electrode. The other, a somewhat similar contrivance or cap, of suitable metal, placed over the skull, with a rubber cap to fit tightly to retain the moisture in connection with the sponge. No special detail of application of moisture or fluid to wet the electrodes was devised—possibly because the first chair built upon this plan (which now lies in the basement of Auburn Prison) was not considered suitable for the purpose it was intended to fulfil. The chairs in use really have fewer objectionable features than the one just mentioned, in that they conform to the ordinary shape and peculiarities of the chair commonly used.

The next arrangement, which was the Kemmler chair, provided one electrode to apply to the spine and to the upper portion of the skull, to carry out the suggestions I first made in connection with this subject, "that the apparatus to be used should be arranged to permit the current to pass through the centers of function and intelligence in the brain." (See Report of Commission to investigate and report the most humane and practical method of carrying into effect the sentence of death in capital cases, page 84.)

The last method of carrying into execution the death penalty by electricity, so far as the electrodes are concerned, was the application of a wet sponge to the thigh and the forehead of the culprit.

These three different applications of the electrodes may now be considered. It must be conceded that the objective organ, or organs, which must be influenced to produce the most rapid death, consist of the heart, the center of the circulatory, the brain and spinal cord, the centers of the nervous, systems. If this is conceded we think there should be no difficulty in arriving at the best location of the electrodes which will the most efficiently destroy the activity of these different portions of the organism. What should be taken into consideration, of course, is the extent of resistance offered by the tissues through which the current is passed, the desideratum being to apply the electrodes so as to offer a minimum of resistance together with a maximum of influence of the current upon the organs mentioned. The application of the electrodes to the soles of the feet calls for the passage of the current through the entire extent of the limbs before the vital organ, the heart, is affected by it. The application of the electrode to the thigh also presents a greater extent of tissue than is necessary, in my opinion, and in reality is not so satisfactory for other reasons. In fact both these methods prevent the greatest intensity of the current from being expended upon the heart. In other words, the conductor represented by the cross section of the whole body, cannot permit that intensity of current that would be presented were the lower electrodes applied more closely to the cardiac region. When it comes to the application of the electrodes to the head we will find that there is valid objection to the forehead electrode as used at Sing Sing, and in the case of Joseph L. Tice at Auburn. Understand, that we are endeavoring to find the best theoretical points of application of electrodes. We must admit, of course, that electrocution may be carried out successfully without placing the electrodes in theoretically the best positions. Given a sufficiently powerful electric current applied to the hands, or to any vital portion of the body, its influence is sufficiently powerful to destroy life. But what is desired is to do this in the best way from all standpoints, standpoints of convenience in application as well as of the completeness of the work with the absence of reflexes or distortions of the body, which might seem objectionable. As to the forehead electrode, it is only necessary to look at a longitudinal section of the encephalon or entire head to see that much of the current may be expended without influencing the cerebrum or the cerebellum, except through dissemination to the

head as a conductor. Whereas, were the electrode applied to the top of the head, as in the Kemmler execution, there could be no question as to the course of the current. Furthermore, it is important to destroy the reflexes of the spinal cord; this would be better accomplished by the application of the head electrode to the top of the head than to the anterior portion. Then, again, I think there is no question but that the application of the electrode to the top of the head can as easily be carried out,or more easily (as in the Kemmler execution), than can the forehead electrode (strapping) method used at Sing Sing. The objection to the application of the electrode to the spine, as in the Kemmler execution, was simply that it was not so easily accomplished as probably, to the thigh; yet theoretically the location was the more desirable.

A still more desirable location, however, both theoretically, or from the physiological standpoint, and also from the standpoint of results in experiments upon lower animals (in which it has been demonstrated that the nearer the electrode is placed to the heart, the more suddenly its action is made to cease), would be the application to the abdomen, in the epigastric region. (See Dr. Tatum's experiments in my report on the "Influence of Electricity on Protoplasm," President's Address before the American Microscopical Society,in this city,August, 1890.) The size of the electrode (within reasonable bounds; it should be, of course, quite large, say 16 to 24 square inches of surface), would probably have very little effect upon the results. The object, however, it seems to me, is that the full intensity of the current be applied to the cardiac region, the force being then expended directly upon the heart before great dissemination of the current is produced by the great cross section of the body in this region. By none of the means heretofore used would it be possible so markedly to influence the heart by the passage of the electric current. The abdominal application, also,could be more readily accomplished. The electrode could be applied before the culprit left the cell, by a strap around the body, the electric connection being made after he was placed in the chair, and the saturating of the electrodes carried out by the same irrigating measures (fountain syringe) used at Auburn at the Tice electrocution. We think there is no question that that result would be more satisfactory, if it were possible to have anything more satisfactory than the execution that took place when Tice was suddenly ushered into eternity at Auburn.

I cannot close this article without referring to the unjust, impracticable and unreasonable statements urged by the opponents of electro-execution; and I have a very great degree of satisfaction, after witnessing the humane taking-off of Tice and Kemmler, in that I have been a strong advocate of a method which so effectually takes away from the execution of the death penalty so many of the terrors that formerly characterized it. I again most emphatically repeat, "that it can be truthfully stated that electro-execution, inspired in the interests of humanity, and with the methods employed, has demonstrated the truthfulness of all that has been claimed by its advocates. If criminals must be executed, there is no method so certain and ready of applicability, if the apparatus is properly provided." (See Proceedings of the American Microscopical Society, August, 1890.)

Discussion.

Dr. Robert Newman, New York City:—The subject dwelt upon in the papers of Drs. Rockwell and Fell with regard to electrocution, is one of the most important that can command the attention of the medical profession, as well as every humanitarian. I do not think these two papers should go by unnoticed. They should be thoroughly discussed and widely read when published. I move, therefore, that this Section ask the Committee on Publication for an extra supply of copies of these two papers, to be distributed largely over the whole world. If they are published in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, they will have a limited number of readers.

I shall never forget, when Kemmler was executed, how the press maligned electricians and said electrocution was a failure. At the time I was in Berlin. These ideas ought to be dispelled. I do not know of anything that has been more maligned than electricity, both by the ignorant and by malicious persons; consequently we ought to do something to dispel erroneous ideas and tell the truth. If electricity has been maligned, electrocution has been much more so, particularly in Germany, and by men who ought to know better. If several thousand copies of these two papers were sent to editors all over the world, it would be the practical thing to dispose of this matter.

This idea of feeling pain during electrocution cannot be too soon dispelled from the public mind generally. The sooner it is done the better it will be for science and humanity.

Dr. George E. Fell, Buffalo, N. Y.:—Regarding Dr. Rockwell's reference to the electric current being much more rapid than the nerve current, I will say that this subject was brought up in the National Electric Light Association at Niagara Falls in 1889. Professor Anthony urged that we could not claim that the question of velocity of the electric current would settle the point as to whether death by electricity "would be painless or not." The electrical executions appear to have settled it conclusively and to uphold the generally accepted belief that the speed of the electric current through a living human organism is very many times faster than the nerve current, which has been estimated by Helmholtz to be about 111 feet per second.

One of the most interesting features in connection with electrocution is this, if a post-mortem be made shortly after you find that a great portion of the blood in the muscular tissue is forced into the visceræ of the body. The kidneys, liver, lungs and spleen and brain are remarkably congested. On cutting into the muscular tissues post-mortem we find that very little blood will flow. This instantaneous tonic contraction of the muscles and almost immediate excessive congestion of the viscera is in itself enough to produce death. The Kemmler execution, which was so horribly mutilated by the press of the country, was just as good as the Tice execution, except the current was kept on longer than was needed.

Regarding the question of linemen being instantly killed, I have often-times questioned whether that is so. A man in Buffalo caught both electrodes of a dynamo and was said to have been killed instantly, but it was found on enquiry that he breathed a little afterwards. The Tice electrocution occupied 45½ seconds from the time the current was turned on until the execution was over. I believe in all instances in making and breaking the current even if it be an alternating one. The effect on the body is much more marked by thus doing than by the continuous current, unless of very high voltage. A current of five or ten seconds will not produce heat enough to amount to anything. and I believe if the current is made and broken at intervals of from three to not more than five seconds the time of execution can be cut down one-half less than the Tice case.

Dr. A. D. Rockwell, New York City:—Mr. Chairman: I have very little to say in addition to what I have already said in my paper. Theoretically, perhaps, the position of the electrodes as suggested by Dr. Fell may seem correct, but practically I believe the method as adopted to be preferable. In the second series of executions, one electrode was placed on the forehead, and the other on the calf of the leg.

In the Kemmler case, one electrode was placed at the small of the back where it is difficult to obtain a perfect adaptation, and where the conduction is by no means all that can be desired. With the application of the electrode in such a place, I ascribe in a measure the somewhat unsatisfactory result of this first test of the efficiency of electricity in judicial executions. Kemmler himself was aware of

the imperfect contact and voluntarily pushed himself back upon the electrode.

We want, of course, to get as near as possible to the centers of vital force, but with the better knowledge that experience has given, it does not seem to me that it will make much difference where the electrodes are placed. Taking into consideration the possibilities suggested in my paper, of expending the force of the electric current on the central nervous system rather than upon the skin, thus avoiding the danger of burning, against which such an outcry is made, currents of greatly increased voltage can be used. With such tremendous pressure complete devitalization would take place, so that there would remain absolutely no residual life energy.

ON THE REFLEX THEORY IN NERVOUS DISEASE.

Read in the Section of Neurology and Medical Jurisprudence at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY L. BREMER, M.D.,
OF ST. LOUIS, MO.

The subdivision of practical medicine into a great number of specialties has not proved an unmixed boon to either science or the welfare of humanity. If one peruses the reports of the specialists and becomes familiar with the trend of their work, one is struck with the peculiar antagonism that exists among the respective representatives or followers of the several special branches. The chief interest of their reports generally centers in the observation that by successfully treating a disease of the organ to which *they* pay special attention, symptoms in distant organs which other specialists claim as their domain, have vanished; the additional remark being generally made that the patient had been treated by such and such a specialist of another order without any benefit.

A few such results, misconceived as a rule, as to their true nature and import, will render the young specialist enthusiastic; from an enthusiastic he is apt to develop into a fanatic, who builds dogmas on misunderstood facts.

One of the chief causes of these aberrations from the true intents and purposes of practical medicine is to be found in the erroneous conception and interpretation of reflex action in disease.

Ever since the custom became prevalent among physicians, especially those practicing specialties, to look upon localized lesions as the causes of disorder in distant organs, the theory of the reflex origin of disease took a firm hold of the professional mind, to the benefit of our science and patients in many, to the detriment of both in many more, instances.

By misuse of the term, and its misapplication to practice evil results have in the course of time by far out-classed the positive good it might have wrought within proper and legitimate boundaries.

The introduction of the term "Reflex" in medicine dates back to the works of Descartes who first applied it to the involuntary closing of the lids which takes place when an object is approached to the eye. The doctrine of the reflex was later on enlarged and elaborated by Marshall Hall, Grainger, Johannes, Mueller, et al. The essence of this law is, as is well known, the response by muscular contraction of certain parts on the application of a stimulus to certain sensory or sensorial nerves. The irritation, then, is reflected as a *movement in a corresponding muscular area*, and motion is essential as a result of indirect stimulation.

The physiological experiment gave a clew to the understanding of many formerly inexplainable morbid phenomena; spasmodic affections and other motor disturbances could be traced to certain local irritations and were in many instances relieved or cured after such local troubles had been remedied.

But when the profession split up into specialties which subsequently spread and developed to present proportions, the theory of reflex action in disease was soon called to aid in the explanation of morbid conditions, which had absolutely nothing to do with that law.

The fact was lost to sight that a true reflex presupposes a *reflex arc* composed of an *afferent* nerve, a *central* nerve cell and an *efferent* nerve. By ignoring the proper definition of reflex action great confusion was created by mixing up "Associated Sensations" or what I would like to call for brevity's sake "Cosensation" (Mitempfindung) with reflexes. Thus quite a voluminous literature of "Reflex Neuroses" sprang up, treating of local or general, sensory or sensorial, even mental affections, caused, as alleged, by local maladies.

This mistake has had a peculiarly disastrous effect on gynecology. Five years ago I read an article on this subject before the St. Louis Medical Society, published in the *Weekly Medical Review*, 1887, p. 8 ff., under the head "Gynecology in Neuroses and Psychoses."

The remarks on this matter, made at that time, were based upon observations in private and hospital practice (St. Vincent's Institution for the Insane, St. Louis). Abridged and slightly modified they are about as follows:

Without denying the possibility of nervous and even mental derangement arising in women from comparatively trivial diseased conditions of the general organs, such as catarrh, cervical laceration or stenosis, uterine displacements or ovarian disorder, I agree with those who believe that the frequency of such cases are vastly overestimated, and that the prevailing practice of treating slight local affections with a view of bettering or curing such morbid conditions as hysteria, neurasthenia and allied diseases of the nervous system, are generally nugatory and injurious.

These injurious results of local treatment consist in aggravating the nervous symptoms and creating a state of chronic invalidism, the prevailing condition among the women of the better classes in our days, the cures, if they do take place, being generally ascribable to other factors, principally suggestion. In many instances such alleged cures are apparent rather than real. There are women who claim that they are benefited by every local application and frequent the physician's consulting room year in and year out.

Gynecological treatment has a corrupting and debasing influence on some neuropathic and psychopathic females who develop a craving for local appliances and manipulations, a speculo-mania so to speak, frittering away their time in the doctor's office, which they have not to spare, and which they ought to devote to their homes and children. From this neglect of the household duties, domestic infelicity and subsequent divorces are apt to result. The remote causes of the latter are in not a few instances traceable to the gynecological chair. A woman who meets with disappointment in married life is now-a-

days inclined to seek relief in the gynecologist's office, as she would formerly apply under like conditions to her spiritual adviser. All her thinking becomes concentrated on her womb, her egotism (generally hysterical) assumes immense proportions, she poses as a martyr to imaginary or quasi-imaginary disease, and in the worst cases worships her doctor as her hero and benefactor.

Meanwhile, the continued doctor's bills are far from having a soothing influence on the mind of the disgusted husband who sees through this farce and conceives an inextinguishable loathing for his wife. The finale of the drama is enacted in the courts under the designation of cruelty, neglect and incompatibility of temper.

Another significant fact is, that married female morphinists are almost invariably patrons of the gynecologist's office at one time or another in their career, and that they are willing to, and often do undergo, all kinds of surgical operations on the womb and its appendages, operations which generally, to say the least, are superfluous. This craving for surgical interference about the genital sphere, sometimes painful and dangerous in character, may seem incomprehensible and even incredible to some, but it is a fact familiar to those who have had opportunities to observe or treat this class of drug victims. The medical history of such patients generally contains a passage which runs like this: The operation was successfully performed and the local trouble is cured,*only* "a little nervousness," in the language of the operator, remains. This small amount of persisting nervousness was, however, sufficient to land the patient at some sanitarium.

Specially harmful and uncompromisingly to be condemned are gynecological examinations and treatment for minor ailments in young unmarried women who, following the fashion of the day, and having their heads full of misunderstood physiological notions, apply to the doctor for local treatment, or still worse, are persuaded into it against their will by weak-minded and fanatical women whose special object in life seems to be to hunt up victims for "local treatment," as it is termed *par excellence*.

Without hesitation, I go the length of saying that gynecological treatment under such circumstances is a crime, that its effects upon the mind of the young woman is that of defloration. Her moral tone, her manner of judging things is altered and lowered; with the consciousness of there being even a shadow of a flaw on her virginity, those subtle qualities disappear which constitute the charm of girlish innocence; her mind is polluted, she is unfit for marriage, and all this, because her doctor happens to hold the opinion that by manipulating the uterus he can cure neuroses. It is the bounden duty of the rightly thinking physician to shame such patients out of gynecological treatment and to help, by so doing, to restore them to health, reason and decency.

But the greatest mistake founded on the reflex delusion, and a very prevalent one at that, is gynecology in mental diseases. Having been connected with an institution for the insane for a number of years, I have had ample opportunity of watching the results of such uterine manipulations. There is scarcely a female between twenty and forty-five admitted to the asylum that has not been treated for womb diseases as the probable cause of insanity, and in case this has not been done, the attack coming on too suddenly, the suggestion is made by the friends or relatives that womb disorder is probably at the bottom of the mental trouble. Somehow it is a consoling thought to relatives of insane women to shift the blame from the brain to the womb and ovaries, especially where the cloud of heredity hangs over the family, and the doctor who pronounces the case "mere nervousness" dependent on womb disease is pretty sure, for a time at least, to meet with approval on the part of the female members of the family, and in case the patient, after a protracted local treatment is committed to the insane asylum, everybody is satisfied that everything that could be done, has been done, whereas in reality everything was done to intensify the trouble and render a cure, if not impossible, at all events highly improbable. It is a maxim in psychiatry, even more so than in general medicine, that the more recent a case presenting itself for treatment, especially institution treatment, the better the chances of recovery. These chances are impaired and sometimes destroyed by the worse than useless gynecological procedures. I say worse than useless, because in many instances they do positive harm. In the predisposed they precipitate the mental cataclysm, they kindle the flame of insanity that was slumbering beneath the embers, they confirm and fix morbid thoughts in grooves that cannot be smoothed out and turn them into channels that refuse to be dammed up.

I know of patients who were thus treated for apparently curable melancholia at home until mania supervened, and others whose delusions were fostered and deepened by local treatment; syphilophobia, imagined pregnancy or fancied destruction of the womb being the result. Frequently the doctor's personality enters into the delusion of such cases, an occurrence which gives rise to very annoying, unpleasant and easily misinterpreted situations.

In the same article I alluded to the unscientific and barbarous practice of spaying women for nervous disorders, having apparently their starting point in the ovaries.

Much had been said and written on this topic before I read that article, and much has been said and written against the practice since by neurologists. Although there has been a healthy reaction in some quarters owing to the greater spread among physicians of neurological knowledge, the evil is, I believe, even greater to-day than it was five years ago. While at the medical centers the truth has at last dawned upon those who specially treat women's diseases, and while it has been solemnly stated that women have other organs than wombs and ovaries that may be at fault and need looking after, and whilst there is a laudable attempt in those quarters to *unlearn* certain things in gynecology, as it has been put, the seed of the evil has been sown too long and too thickly as to be hampered in its spread and growth by some isolated anathemata that may occasionally be hurled against the abuse by a few authorities. Too many useless gynecological operations have been witnessed and admired by the present generation of physicians, and their minds have been too powerfully impressed *ex-cathedra*, for more than two decades, with the alleged beneficial results of gynecological procedures, to make room for the hope of any amelioration in the near future. The mind of the general practitioner is chronically infected with the delusions taught for years by books and in the colleges, and the

speculo-mania among women prevails epidemically, having spread from the cities,its former exclusive seat, to the country population. It is a hopeful sign, however, that advanced and enlightened gynecologists are of late moving in the right direction.

What has been said of gynecological practice as being to a very considerable extent based on delusions, holds also true, though not nearly to the same extent, in the specialty of genito-urinary diseases in men. The well-known chains of nervous symptoms attending diseases of the bladder, prostate and kidneys in neurotic men have also, in many quarters, given rise to the idea that such local conditions caused the nervous disorders reflexly. Aside from the fact that at best only motor disturbances, such as spasms of voluntary and involuntary muscles (vessels, intestines) could be called reflex, many of the nervous manifestations are co-sensory, whilst the most of them (at any rate their persistance) are the result, but not the cause of them.

Mistaken notions about the reflex action have in this particular field of medicine, too, wrought an immense amount of harm, and the modern nuisance of illegitimate orificial surgery is one of the parasitic growths that luxuriates on, and at the expense of, legitimate genito-urinary surgery.

The irritable bladder, the irritable urethra, prostate, rectum, or perineum with distant associated nerve complication, affections which do not call for operative interference any more than the irritable breast or the irritable heart, have all more or less unnecessarily been tampered with from ignorance of the fundamental teachings of neurology. Causes of functional central and coarse systemic nerve-disease (tabes e.g.) that were locally treated as vesical or rectal affections, abound in the personal recollection of neurologists, and all these improper practices were done on the reflex theory.

Another phase in the evolution of the theory of, and practice on, the law of reflex action, illustrating the blending of reality and imagination, truth and fiction, is the relation of ocular defects with certain neuroses. Since it became known that visual abnormalities often accompanied nervous diseases, oculists tried to establish a causal connection between eye-affections and neuroses, the same as gynecologists, aurists, rhinologists, dentists, etc., did before. The reflex theory gained here a new field for application.

The startling statements of the remarkable results obtained in the treatment of chorea, epilepsy and hystero-epilepsy and neuroses in general by the mere correction of ocular defects called forth the famous inquiry of the Steven's Commission. The investigation ended, as might have been foreseen, like a regular doctor's quarrel, or a theologian's dispute, each side being more confirmed than ever in the correctness of their respective positions. In perusing the history of this "Stevens' Commission" there is one point that strikes one more forcibly than any other: the patience and perseverance of both patient and oculist. Month after month elapsed without any material benefit being appreciable in the patient's condition, and yet they continued to present themselves with a regularity and endurance worthy of a better cause. The tenacity of such confiding sufferers finds its amalogon only in gynecological patients and in persons afflicted with chronic catarrh of the middle ear, who are specially hopeful and continue treatment to the last.

As with the latter classes the enthusiastic physician who treats them is in the enviable and impregnable position of the Indian medicine-man who prophesies rain until it finally does rain. The remissions and intermissions in all functional nervous diseases, and for that matter, those due to organic trouble, also, are powerful allies of the doctor who has the knack of holding nervous cases by performing small and insignificent operations on them, however indifferent they may be.

There is an old and undisputed maxim: "The world wants to see performers." This is especially the case in the neurotic world. Nothing, however, produces such an overwhelming and occasionally such a beneficial effect on the fertile, though morbid imagination of the sufferer from nervous disease, as an instrument of precision and its application. The nerve crank will swear by the oculist's "Phorometer" as he will testify to the wonderful effects of magnetic water. He will continue to have his eyes' muscles clipped by the oculistic impostor and marvel at the great advances which have been made in medicine.

I know of cases of incipient insanity that were treated by such muscle-clipping; it is needless to say with what result.

Certainly the aid of scientific and conscientious ophthalmologists to neurology and to internal medicine generally has been of the greatest advantage, and has established many valuable points touching the relation between eye and brain, and this knowledge has benefited many sufferers who, without this aid, would have continued in chronic martyrdom. I myself bear cheerful testimony to the prompt relief of some functional nerve disturbances following the use of properly selected glasses and other rationally directed ophthalmological treatment; my protest is aimed at the ocular "reflex" humbug that started in New York and bids fair to imbue the profession with the same erroneous and harmful ideas as have obtained in other specialties.

A great stir in the medical world was created when Hack announced in 1882, that he had cured a great number and variety of neuroses by cauterizing diseased portions of the nasal mucous membrane, removing small polyps and relieving catarrhal conditions generally. The firmness and precision of his reports gave a great impetus to the study and treatment of nervous affections having their supposed origin in diseased conditions of the upper air-passages. More and more the nose, throat and larynx were inspected, for the *causa nocens* in nerve diseases, and soon there was a galaxy of brilliant reports adorning laryngological literature, dazzling and perplexing the unsophisticated observer.

In Hack's report, and still more in those of his followers real reflex affections, such as asthma, continued sneezing, spasms of the glottis, and coughing, were again mixed up with associated neuroses, neuralgias and headaches, *e. g.* After the enthusiasm has subsided a little, and especially after the electric search-light of neurological inquiry had been turned on a number of these marvelous cures, it became evident that many of the successes were only temporary and that spastic seizures and sensory disturbances would return after shorter or longer abeyance, in spite of the removal of the local affections.

Like in other therapeutical booms, together with the unavoidable reaction, cases are now being re-

ported where grave and permanent neuroses have resulted from cautery of the upper air-passages, and truly progressive specialists have begun to realize that back of the local disease there is often a central neurosis which refuses to be favorably influenced by local treatment, but yields, together with the peripheral disease, to a rational general plan of treatment. There are, however, too many left yet who believe that catarrh is the root of nearly all human evils, who imagine that nearly all morbid nervous conditions are caused reflexly from the nose, and who even believe that they can cure hysteria and insanity by local means.

While it is perfectly right and proper and simply a matter of course, to eliminate any peripheral irritations which naturally tend to intensify existing nervous derangements, it must be remembered that back of the unimportant peripheral, there is an all-important central disorder and that local means are of no avail when central ones are overlooked.

It would be needless to dilate upon the mis- and abuses of the reflex theory in aural, dental and other local diseases. Here, as elsewhere, reflex troubles are met with, but not to the same degree as is claimed by many. Some dentists especially do a great deal of damage to patients afflicted with facial neuralgia because they labor under the mistaken idea that all such affections start from the teeth. By the jarring attending operations on teeth, they often aggravate the trouble. The pulling of sound teeth for the relief of pain, a procedure which even in our days is not unfrequently resorted to, cannot be too strongly and unqualifiedly condemned.

I cannot refrain from devoting a few words to another delusion which has taken a firm hold upon the profession and which relates to the rôle that an abnormal condition of the prepuce and clitoris is believed to play in certain nervous affections of children.

Reflex epilepsies and reflex paralyses have been indiscriminately and recklessly attributed to such abnormal, often excessively trivial conditions. The reports of the speedy relief, and cure of seemingly hopeless maladies in children published in the beginning of the seventies read like tales of 1001 nights. A simple operation on the preputium or the clitoris, especially circumcision in boys and the removal of a ring of hard and inspissated smegma from the fossa glandis penis was said to have changed cripples into healthy individuals.

While I was perusing these reports one peculiarly struck me very forcibly; it was the absence of neurological criticism and the prevalence of letters written by exulting mothers who bore testimony to the wonderful change wrought by the operation, but who in their writings displayed an unmistakable hysterical temperament. What this means, both as to the reliability of such testimony and the character of the disease in their offspring I need not dwell upon at this time and place. Of late the miraculous reports have not been so frequent, although the delusion is still prevalent, that nervous disorders are caused instead of simply aggravated by perputial or clitoridian abnormalities. Again, in order not to be misunderstood, I emphasize that peripheral disease here, as elsewhere, ought to be treated, because in a certain percentage of cases (not in all, by any means!) they give rise to co-sensory and reflex disorders, possibly even reflex paralysis; I protest only against indiscriminate and senseless generalization.

The most remarkable cases of this class were the paralyses reported as cured. To my mind they were cases of poliomyelitis chronica infantum, which, while improved by relieving local irritative lesions, were certainly not completely restored.

That cases of reflex paralyses do occur, there can be no manner of doubt. Instances of this kind have been reported in the medical history of the War of the Rebellion and have likewise been observed during the Franco-Prussian War. Thus, *e.g.*, if a person, as one report has it, receives a bullet in the region of the tenth rib, and the arm on the same side is immediately paralyzed, the course of the ball precluding all possibility of an injury to the nervous apparatus of the arm either peripheral or central, we must admit that this is a true reflex paralysis.

Such cases have been almost invariably observed in sudden and violent injuries; whereas the paralyses alleged to be due to distant lesions of a chronic nature must, in my opinion, be regarded with suspicion.

The same is true of the reported reflex atrophies, whether resulting from acute or chronic distant lesions.

Our several paths in life are divergent; with the divergence in direction there is necessarily connected a difference in the facts gathered on the several fields of observation; from this difference there ensues a discrepancy of opinions and their inevitable clashing. It is by such antagonism, and in particular by our intra-professional strifes and combats that truth is finally evolved and errors disappear.

It might appear that the foregoing remarks are but an example of the well-known *orationes pro domo*, so common in specialistic literature, and that they are no more or less than one of the often witnessed efforts of a specialist emphasizing the importance of that branch of medicine which forms the subject of his predilection.

Far from it! The object of my criticisms was to bear testimony to the harmful and noxious feature of specialism, as tending by its luxuriant growth to overshadow, obscure, and dwarf "internal medicine," so-called, *i.e.*, that science which alone is capable of rendering the specialist fit for his work, and insuring that success which is not gauged by the amount of money he makes (often unearned and undeserved), but by the real and substantial aid which he bestows upon his fellow men. Of all the branches of internal medicine, however, which specialists ought to cultivate, and a satisfactory knowledge of which alone can prevent self-deception on the part of the physician and unjustifiable meddling harmful to the patient, neurology stands foremost.

REFLEX URETHRAL AND GENITAL NEUROSES, URETHRAL NEURALGIA AND HYPERÆSTHESIA AND NEURALGIA OF THE TESTES.

Read before the Section of Neurology and Medical Jurisprudence, at the Forty third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

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There are a few morbid conditions of a functional character which, although often times an integral part of organic diseases of the organs which it is my especial province to consider, are occasionally

either morbid entities or else the prominent source of complaint on the part of the patient—indeed we are apt to be more often consulted regarding these functional or nervous derangements than the diseases upon which they frequently depend.

There is, perhaps, no subject in the whole range of genito-urinary disturbances, of greater importance than the varied phenomena involving nervous derangements, that are due, directly or indirectly, to pathological conditions of the various portions of the urethral canal. It is certain also, that in no class of cases which come under the observation of the genito-urinary surgeon, is an accurate diagnosis of greater importance, or more difficult to accomplish. I feel, therefore, that a contribution to the special study and treatment of such cases is to say the least, warrantable.

When we consider the vast amount of labor and talent that have been devoted to the study of the reflex neuroses of the female, due wholly or in part to pathological entities affecting the uterus and its appendages, it is certainly surprising that more attention has not been given to analogous conditions in the male, due to disturbances of the generative organs and especially of the urethra.

Taking as our point of departure the prostate body, we will find quite a close similarity between some of its morbid conditions and those affecting the uterus. Physiologically, the prostate, or at least a portion of it, is the homologue of the uterus, there being the closest resemblance in the muscular structure of the two bodies. If the muscular tissue becomes perverted in growth, we have in the one, uterine myoma, and in the other, prostatic hypertrophy, the structure of the two morbid processes being strikingly similar. When, as is occasionally the case, the "third lobe" of the prostate becomes so circumscribed as to form a distinct tumor, it is generally not unlike a pedunculated fibroid. It will be found also that certain remedies which have a pronounced action upon unstriated muscular fibre, have a somewhat similar action upon the prostate and uterus, this being especially true of secale, ustilago maidis, and hammamelis. Certain sedative remedies act very similarly upon irritative affections of the uterus or ovaries, and the prostate. To carry the argument a little further and directly approach the subject of neuroses, it will be found that certain irritations affecting the prostate, will produce effects quite like those produced by utero-ovarian irritation in women. False spermatorrhœa (spermatophobia), pseudo-impotency involving disgust for the sexual act, melancholia, hypochondria, neuralgias whether of the contiguous or remote nervous filaments, and nervous inhibition amounting to almost complete paresis, are all possible results of urethral or prostatic irritation, and these conditions are all represented by similar disturbances, such as hysteria and allied conditions in the female, due to morbid conditions of the generative organs. The analogy between the results of prostatic catarrh and those of cervical catarrh, as shown in one of the cases herewith reported, is sometimes especially striking.

One of the interesting features of stricture of the urethra, is the ensemble of symptoms of a nervous character that is so often seen, and which neuroses are frequently entirely disproportionate to the degree of organic trouble present. Cephalalgia, neuralgia in various localities, particularly sciatica, lumbar and intercostal neuralgia, are quite common, but are probably regarded by both physician and patient, as coincidences rather than as bearing any consequential relation to the stricture. Associated with these are others (quite as prominent in some cases) of a purely mental character, such as melancholia, hypochondria, disturbed sleep, incapacity for intellectual effort, and deterioration of business capacity, perhaps associated with great irritability of temper. Disturbed digestion and general faulty nutrition are quite constant. That these various morbid conditions depend upon the stricture is never fully appreciated until that organic entity is cured, when the complete restoration to health demonstrates their true relation to the primary source of irritation. Many of my patients tell me that they had become so accustomed to their little ailments that they had come to consider them a matter of course, and had never dreamed of their association with the stricture until the latter was cured. One of my patients remarked that he did not know how sick he was until he had been cured of his stricture.

Certain cases of gleet are associated with considerable mental depression which is commonly attributed to the moral effect of the supposed drain upon the system. This mental disturbance I believe to be in many instances the result of reflex irritation through the sympathetic system, which is so closely associated with the functions and nutrition of their sexual organs.

Morbid conditions of the urethra not only cause reflex neuroses in other portions of the body, but they are often a reflex result of disease of contiguous strictures; thus I have noted cases of spasmodic stricture dependent upon hernia and varicocele. Dr. Otis has described some very interesting cases of chronic spasmodic stricture of reflex origin. Operations about the arms are very often followed by spasmodic stricture and urinary retention. Morbid conditions of the anterior portions of the urethra often cause reflex disturbances of the deeper portion of the canal, or indeed, of the bladder. This is very familiar in connection with the results of contraction of the meatus.

One of the most annoying complaints which the surgeon is called upon to treat in connection with the genito-urinary apparatus, and especially in stricture, is neuralgia and hyperæsthesia of the urethra. This disorder is most often the result of long standing urethral inflammation, or stricture with its attendant gleet, and frequently persists long after all organic disease has apparently been cured. The majority of patients who suffer from urethral neurosis of this kind are either of an emotional, highly sensitive nervous organization, often simulating "hysteria in the male," or of a gouty temperament, with highly acid and concentrated urine. Anæmic and cachectic patients are especially liable to it if nervous or rheumatic. In such patients the imagination has been overwrought by the dread of serious results from urethral disease, and the mind depressed by a sense of self-degradation. The condition of the mind as well as that of the urethra, has been impaired by long continued treatment of something which, although trifling in itself perhaps, is to the patient a terrible morbid entity, and a mental incubus from which he is never free excepting during the hours of sleep. Quack literature, irritating injections, over-enthusiastic treatment, sexual starvation and excitement without gratification, are all disturbing elements in his case, and if we superadd the re-

sults of dissipation, intemperance and dietetic errors, what wonder is there that he never gets well, or that he magnifies the slightest unusual sensation about his sexual organs into something new, serious and startling. Such patients will say to us when we try to convince them that their gonorrhœa, gleet or stricture is practically well: "But, doctor, I am not quite right, I have a funny feeling at this point in the canal;" or the complaint will be varied by a description of severe burning or cutting pains in the canal during micturition, or a tender spot, usually near the meatus; sometimes the pain radiates to other portions of the sexual organs. On examination with the urethroscope, nothing appears which would account for the trouble; and treatment is usually of little avail, unless we succeed in obtaining the patient's confidence and inducing him to believe that his trouble is not organic and will soon wear away—only too often, however, he goes from surgeon to surgeon in the vain endeavor to find relief, until, despairing and disgusted, he resigns himself to what he considers inevitable fate, and lapses into confirmed melancholy and hypochondria.

Morbid states of the prostatic anus and vesical neck, with or without coexisting stricture, occasionally give rise to urethral neuralgia; great irritability of mind alternating with depression and melancholia. Vesical calculus and tumors are especially liable to be complicated by it. Hyperæsthesia of the urethra is so often associated with stricture and gleet, that it is worthy of consideration in every case in which obstructive spasm occurs during instrumentation; some canals will be found to be so hyperæsthetic that a chronic spasmodic condition exists. In some cases of chronic spasmodic stricture or urethrismus, local lesions of the mucous membrane exist, while in others nothing abnormal is to be detected.

Hyperæsthesia of the Testicle is an interesting condition which sometimes results from reflex irritation from stricture; more often, however, it is due to excessive sexual indulgence, or the opposite extreme, *i. e.*, ungratified or prolonged sexual desire. It is most apt to be associated with cachexia, gout, neurasthenia or anæmia. The testicle may be relaxed and soft, or full and firm to the feel. Oftentimes varicocele is present and acts as an efficient cause for the affection. Hypochondria, melancholia and various mental perversions of a delusional character are not unusual, and may perhaps be associated with a sluggish portal circulation or dyspepsia. Sudden deprivation of customary sexual indulgence is said by Curling to be a frequent cause. The symptoms consist in extreme sensibility and tenderness, either of the entire testicle or some spot upon its surface. So exquisitely tender is it that oftentimes the contact of the clothing and the various bodily movements cannot be borne.

Neuralgia of the Testicle is really an exaggeration of hyperæsthesia, and has in addition to hypersensitiveness, paroxysms of shooting, cutting pain in the organ. The causes are much the same as for hyperæsthesia, syphilis, gout and neuralgia having a prominent place in its etiology. Urethral stricture quite often, and prostatic and bladder disorders occasionally, cause it. The pain is much like that of renal colic, and is sometimes attended by retraction of the testis from spasm of the cremaster, and the sick, faint feeling and cold perspiration characteristic of shock. I believe that some cases are really due to irritation of the renal pelvis and ureter by sharp crystals in the urine, and this acting reflexly produces pain in the testis. Usually only one testis is involved. As a rule, the patient can walk about, but in the severe cases he is apt to be greatly prostrated, and in addition, he usually suffers from pain and soreness on movement.

The Treatment of the neuroses which have been presented consists in following some very plain indications, as well as putting in practice numerous general principles. First and most important of all is attention to the patient's mental condition. His mind should be diverted from his physical ills, and at the same time kept free from all sources of sexual disquiet. Questionable literature and the society of loose women must be avoided; in short, an attempt should be made to correct the impression so prevalent among men, that man's chief mission upon earth is the procurement of material wherewith to cloy his sexual appetite. *Once dispel the idea that his penis and testes constitute the axis around which his earthly existence revolves, and one will have done more for his patient than if he had fed him the entire contents of a drug store.* Having allayed sexual disturbance of a purely mental or moral character, it remains for us to secure for our patient physical sexual rest, it being sometimes a matter of nice judgment to determine whether moderation or strict continence is best for the patient's welfare. In a general way it may be said that those neuroses which are dependent upon or complicated by actual inflammation, acute or chronic, demand absolute continence, while in those of a purely nervous character, moderation is to be advised. It is always a hard matter to determine the degree of success of our prescription in this matter, as the patient's penis is not only quite liable to gain the mastery over his reason and judgment, but over his morals as well, and he will therefore be apt to consider that a lie to his doctor, like Rip Van Winkle's drink, doesn't count.

Second only to sexual rest, is the correction of urinary acidity. This may be corrected by diet and remedies combined, the diet being by far the most important. The proper standard for a suitable diet is bread and milk, but this may be varied within narrow limits. Nitrogenized food, stimulants and tobacco must be strictly prohibited. As an adjuvant to this regimen, the Turkish bath does excellent service.

The best remedies to correct hyper-acidity of the urine, are the acetate and citrate of potassium, liquor potass, and in gouty or rheumatic patients (who are especially liable to neurotic symptoms from urinary disturbances) lithia, colcicum, and salicylic acid. Mineral waters are very useful, the Buffalo Lithia and Waukesha waters being especially useful. Several of my patients claim great benefit from partaking freely of the Garfield Park mineral waters.

Sedatives and anti-spasmodics are often useful in these cases, the following being of service in different cases, viz.: potassium bromide, gelsemium, hyoscyamus, camphor monobromate, morphia, salixnigra, and ergot. Tonics are often required, the best being the chloride of iron, strychnine, arsenic and quinine. In those rare cases of spasmodic stricture of malarial origin, quinine is of course a specific. Three very useful drugs are the phosphide and bromide of zinc, and the bromide of arsenic, these being great favorites of my own.

In many cases of urethral neurosis, surgical interference is required, thus a contracted meatus must be cut, a stricture dilated or cut, a hernia or varicocele operated upon or properly supported, etc. *The paramount indication from a surgical standpoint, is the relief of obstructive and inflammatory lesions of the genito-urinary tract.*

Cases of irritability and hyperæsthesia of the testis are by no means promising. The use of anodynes is ordinarily reprehensible, as the disease is chronic in character, and a narcotic habit may be readily acquired. If hygiene, the steel sound, the suspensory bandage and marriage do not cure, the case is apt to be hopeless. Galvanism and the application of ice bags, are said to be of service. Castration is not to be thought of, but the idea suggests itself to me that in an obstinate case, stretching the spermatic cord with incisions into the tunica albuginea might be successful. If varicocele exists, an operation may be successful in curing the neuralgia. Hammond suggests pressure upon the cord for the relief of obstinate cases, upon the theory that in this way the sensibility and conductivity of the affected nerve fibres will be obtunded. Return in opposite after removal affected organ.

A very interesting case showing the great annoyance which may reflexly arise from slight irritation of the genito-urinary tract came under my observation a few days ago. A gentleman 28 years of age had been troubled by frequent micturition, especially at night for some years. At times he would be compelled to rise four or five times at night to evacuate his bladder. The only point in his history of any importance was a gonorrhœa some seven or eight years ago. He confessed to masturbation and sexual excess in times past, but stated that sexual apathy had prevailed of recent years. On examination, I found a meatus which had been badly cut by some surgeon one year ago. Just within it was a very irritable and resilient stricture of a calibre of twenty Fr. Not a stricture perhaps, in the eyes of some surgeons, but a decided stricture in my opinion. This contraction was so irritable that attempts at exploration threw the entire canal into a state of spasmodic contraction. I found it impossible to pass a bougie through the deep portion of the canal. Cocaine was applied and a meatotomy at once performed. As soon as the meatus was free, I passed a 32 Fr. solid steel sound into the bladder without the slightest effort. The night of the operation, the patient had the first uninterrupted sleep that he had enjoyed for years, this experience being repeated every night following until he left for his home in the West.

We have here a case of vesical and prostatic hyperæsthesia, and chronic spasmodic stricture—urethrismus—instantly relieved by removing the reflex source of irritation, a resilient and irritable meatal contraction.

Another interesting case of a somewhat different type is at present under my care. This case shows how posterior irritation may reflexly excite disagreeable symptoms in the anterior portion of the genito-urinary tract. A young man of twenty-five who had suffered from several severe attacks of gonorrhœa, presented himself to me complaining of severe burning and hot, lancinating pains along the pendulous urethra, localized at times at a point one inch posterior to the meatus. These painful symptoms were chiefly manifest after urination, although present in the intervals. The patient was extremely neurotic and suffered from sexual hypochondriasis. Otherwise he was in normal condition. The urine presented no pathological features, save tripper fäden and mucous casts of the prostatic follicles of the characteristic horse shoe nail variety. Examination with the bulb showed a urethral calibre of 34 French, and an absolute freedom from contractions. There were several points of tenderness in the penile urethra and excessive tenderness in the prostatic region. Rectal examination showed the prostate to be slightly enlarged. I made the diagnosis of urethral neuralgia and hyperæsthesia dependent upon posterior urethritis and follicular prostatitis. There was no cutting to be done, and the treatment therefore, consisted of intermittent dilatation with large sounds, and the application of nitrate of silver solution to the prostate. These applications were alternated with the application of the continuous current, positive pole, to the deep urethra. Internally, tonics were given, the tr. ferri chlor. being mainly relied upon. The case has slowly but markedly improved, a fact which is particularly gratifying in view of the stubbornness of such cases.

I wish to state, in passing, that I envy those surgeons who have such brilliant success in the management of this type of genito-urinary neurosis as is claimed by some. Personally, I had rather see the gentleman with the cloven hoof walk into my office, than one of these patients.

The explanation of the obstinacy of such conditions is to be found chiefly in faulty sexual hygiene, matter over which we have but little control.

As illustrative of the interesting character of some of the cases described, I take the liberty of presenting the following, selected from my case book.

Case 1.—Reflex vesical irritability and intercostal neuralgia from contracted meatus. W. R., age 39. This gentleman had had numerous attcks of gonorrhœa in his youth, the last attack having occurred about fifteen years ago. Since this last attack he had been troubled with frequent micturition, necessitating his rising six to eight times during the night, and causing great irritability of mind. Micturition was occasionally quite difficult, requiring fifteen or twenty minutes for its completion, the stream being especially slow in starting. Every spring and fall and whenever he was overworked he suffered from a severe attack of pleurodynia, which had been variously diagnosed as pleurisy, impending pneumonia, cardiac neuralgia, intercostal nearalgia, etc. In two of these attacks in which I attended him, there was an elevation of temperature of about four degrees, with considerable prostration, leading me to believe that the attacks were of a rheumatic character. On examination of the urethra, I found the meatus so small as to barely admit a small probe, and excessively tender and inflamed. A slight gleety discharge was noticeable, which the patient stated had been a constant symptom for some years. I at once enlarged the meatus to 34 French, and attempted a thorough exploration of the canal. I found that steel sounds would not pass the muscular urethra on account of the intense spasm which they induced, soft bougies, however, passed readily up to 18 French. Above that size could not be passed without producing intense pain. No organic contraction of the canal could be demonstrated by either urethrometer or *bougies a boule*. The second night after the meatotomy, the patient slept soundly for the first time in some years, and he has continued to secure his natural rest ever since, it being now three months since the operation. The flow of urine has become quite free, and starts as soon as an attempt at micturition is made, the act of micturition being of normal frequency. A marked improvement in the general health is noticeable, and the nervous irritability has in great measure disappeared. There has been some increase of weight, but as the patient is naturally spare, this has not been very marked. The attacks

of pleurodynia have not recurred, although the usual time for their occurrence has passed; and as time goes on, I am confident that the theory of their dependence upon the urethral irritation, will be confirmed. The gleet has disappeared entirely, and there has been a decided increase of sexual vigor; in short, as the patient expresses it, he is "himself again."

Case 2.—General sympathetic disturbance and neuralgia of the testes, from stricture of large calibre and follicular prostatitis. J. G. R., aged 45. This gentleman had had several attacks of gonorrhœa, the last one having occurred some 20 years ago. For the last four years had been suffering with irritation of the urethra, which had been referred to stricture, and treated by dilation. Later on he had been "quacked" for diabetes, prostatic enlargement, Bright's disease, rheumatism, and several other afflictions, with no effect save to convert the patient into a confirmed hypochondriac. At the time he consulted me, he had been suffering from paroxysmal pain in the testes, with occasional "burning" sensations in the testes, perineum, and cranial vertex, and pains of a rheumatic character in the limbs. On examination of the urethra I found that it would admit an 18 English sound quite readily, save that some pain was experienced at a point one inch from the meatus. At this spot the *bougie a boule* demonstrated the existence of a linear stricture of large calibre. The prostate was found to be somewhat tender, but not enlarged. On examining the urine I found that it contained membranous shreds, which from their appearance I judged to be from the prostatic urethra, and the result of follicular prostatitis. A slight gleety discharge was noticed, evidently of a similar origin.

The meatus and stricture were cut to a calibre of 40 French, with a complete relief to the neuralgia of the testes. The rheumatism in the limbs has greatly improved, but the feeling of heat in the testes, perineum, and head has in a measure persisted, although much better. These latter symptoms I attribute to prostatic irritation, more particularly because applications to the prostatic sinus, of a sedative or astringent character, produce a marked and speedy amelioration of them. I have found also that the shreddy appearance of the urine was increased by each application to the prostate. Hot boracic acid irrigation has been substituted for these applications, and the case is slowly improving. The connection between the neuralgia of the testes and the stricture in this case is demonstrated by the improvement resulting from urethrotomy.

Case 3.—Pseudo-impotence from contracted and irritable meatus. This case and case 4, I will not give in detail, but will present the salient points:

A young man of 27 had suffered from several attacks of gonorrhœa, the last of which ran into a gleet which lasted about a year. There has been no trouble with urination, but about six months before I saw the patient, he noticed a loss of sexual power. He would succeed in securing an erection at times, but erection would suddenly cease in the performance of the act of copulation. On examination I found the penis and testes apparently normal, but the meatus was quite narrow and excessively sensitive. There was no deep or penile stricture.

The meatus was incised to 34 French, and sounds passed to the bladder every third day for several weeks. At the end of a month improvement was reported, and in about two months the patient reported himself as entirely recovered from his sexual disability.

Case 4.—Vesical atony from contracted and irritable meatus. This patient, 40 years of age and a gambler by profession, gave the usual history of numerous gonorrhœas and also of syphilis. Micturition had for a long time been attended by pain and smarting at the meatus, and a slight gleet had been present for some years. For about a year the stream had grown less and less forcible, until quite a strenuous effort was necessary to empty the bladder. On examination the meatus was found to be only moderately contracted, but very tender, the lips being everted and reddened. No deep strictures were discoverable. The feeble flow of urine through the catheter demonstrated the vesical atony. As the obstruction was only moderate and was congenital, the atony was explicable only upon the theory of reflex spasm of the cut off muscle and inhibition of the detrusor urinæ. Meatotomy to 40 French resulted in an almost complete cure as demonstrated by examination six months after operation.

Other cases of a neurotic character have occurred in my genito-urinary practice, but these cases will serve for the purpose of illustration. In all of my cases, due attention has been paid to general hygienic and medicinal measures, but the details of treatment would simply result in prolixity, without adding to the value of the report.

I have found that reflex neuralgia of the testes, penis and cord, and spasmodic stricture are by no means rare as several instances among my patients serve to demonstrate.

Discussion.

Dr. J. G. Kiernan, Chicago, Ill.:—The subject of reflexes is an interesting one, and a Chicagoan is in duty bound to take it up, for we have a remarkable genius there who cuts out "pockets" of the rectum, removes the clitoris, the ovaries for insanity and neuroses, and then the patient recovers—if he or she, as the case may be, does not jump out of a window. He claims to have cured moral insanity by removing pockets of the rectum. Some of the patients are no better than they were before these pockets were removed. He has cut the "pockets" of several reporters, but they are as great pathological liars as they were before. To come down to the main point, there are certain instances in which we are justified in a limited use of the reflex hypothesis, in connection particularly with the genito-urinary organs of the male. It is well known that the first symptom of renal disease in horses is paraplegia, and what occurs in the lower animals may occur exceptionally in mankind, especially in those degenerate types who resemble animals. These cases are extremely rare, and the burden of proof rests on those who report them.

Dr. Hughes for the last twelve years, in the *Alienist and Neurologist*, has denounced the abuse of spaying and removal of the tubes. I have seen five cases in an insane hospital in which the lucid interval was converted into excitability by oöphorectomy, and such cases frequently appear in the literature. These gynecological procedures have had the same result. That gynecological procedures have been scandalously abused in the treatment of the psychoses and neuroses, is the opinion alike of gynecologists and neurologists. The "reflex" hobby has been ridden to death.

Dr. C. H. Hughes, St. Louis, Mo.:—I think the paper of Dr. Bremer is a most admirable and pertinent one, and when it is published in the Transactions it will go before the general profession, where it will do some good. I think that the time has come for iterating and reiterating the fact that this reflex theory has been carried farther than the physiological, anatomical and pathological facts warrant. We know from the particular direction that our own studies have taken for the past thirty years or more in regard to this subject, that some of the claims for the reflex disease are absolutely groundless, and physiologically, pathologically and logically ridiculous. It is not difficult to understand how a wave of irritation, starting from a congested ovary, has been a point of local irritation, may be transmitted along the ganglionic system so as to involve the heart in ganglionic functional disturbances. But it is a difficult thing for a neurologist to understand how an indurated cervix can by any process of reasoning, based upon anything known in the physiology of the nervous system and its connections; or how a cicatrix, which twenty-five or thirty years ago was made with impunity and said by gynecologists to be harmless, can be the *fons et origo* of mental aberration. These gentlemen mistake sequences in the neuropathic for consequences, and jump at the most erroneous of conclusions, and gynecology has brought itself into disrepute during the past three decades in its history to such an extent that its own votaries are to-day engaged in retracting their formerly promulgated errors. They call them "nerve" counterfeits of uterine disease, because they now understand better than they did a quarter of a century ago the nervous mechanism and nervous diseases of woman. The very diseases which in the literature of gynecology were treated of twenty-five years ago as gynecic neuroses dependent upon uterine diseases, are confessed to be neurological counterfeits of uterine disease. It is the province of this Section to further enlighten the general profession, and I am not sure but that some of the genito-urinary surgeons may receive some enlightenment in the same direction from neurology. Fortunately they have not gone so far. If Dr. Lewis A. Sayre had taken more account of the neuropathic condition of his patients and their constitutional tendencies, he would not have expected so much from a circumcision, and attributed the results of change of air and of environment, and general tonic treatment, to his little operation on the foreskin.

Can any gentleman tell me how we might have a facial neuralgia dependent upon ovarian congestion? Can any gentleman explain to me by what physiological process of action it can be shown, or by well established clinical experience it can be demonstrated, that we can have such a pathological result from a cicatrix of the cervix? Yet it has fallen under my observation to have treated such patients. I remember to have read of a case months ago which was finally cured, which had undergone nine years of gynecological torture upon the hypothesis that the patient's neuralgia was a reflected uterine irritation. The woman's husband was a doctor and her brother was a doctor, who blamed the woman's uterus, and their suggestion was confirmed by subsequent consultants.

While I say, as a neurologist, that all sources of a peripheral irritation should be removed in suffering patients, because the neuropathic are a peculiarly irritable class of patients, and local irritation depresses and lowers general nerve tone and thus aggravates neuropathic conditions elsewhere, intensifying actual nervous conditions in other parts of the system and bringing into activity latent states of instability through lowering of the nutrition of the nerve centers, the ever ready reflex theory is far too often misapplied and too unwarrantably evoked.

Dr. William Fuller, Grand Rapids, Mich.:—Personally I desire to thank Dr. Bremer for his paper on account of the high moral tone of the sentiments expressed in it. I feel that the Section is to be congratulated upon having such a paper as that. I think that the abdomen is too often opened upon too slight pretext. A careful diagnosis is now ignored. I can recollect a time when it was more disgrace to a surgeon who upon opening the abdomen should find what he did not before expect, than it is now to kill a patient on the table. Laparotomy is an indefinite word, and should be confined in its use to those instances in which the abdomen is opened by mistake or for information only. The glory of having "made our last fifty or hundred laparotomies" is to some persons a dangerous sentiment and to be deprecated, as an aspiration liable to disgrace legitimate surgery in the eyes of the profession and of the people. The present craze to unsex woman is an outrageous abuse of the art. The ovaries of one woman were removed on account of pains from gall stones. I would suggest the removal of the testicles for slight nervous disturbances in males as a counteracting measure.

Reflex derangements mostly follow definite courses in the nervous system, affecting related bodily functions and mental emotions. Sexual diseases affect the passions, produce hystero-epilepsy and moral defects. Masturbators become religious melancholics, and nearly all the peculiar religious sects and wild philanthropic schemes have their foundation in derangement of the sexual system.

Dr. J. E. Emerson, Detroit, Mich.:—I desire to personally thank Dr. Bremer for his excellent paper and for its vigorous tone. I have experienced the grievances which he has expressed from fanatics who have made so much of the reflex neurosis theories in regard to disease, more especially in cases of insanity, where many practitioners insist upon making a vaginal examination in every case of insanity in a female. Dr. Goodell has called attention to the fact that women have other organs besides the uterus and its appendages, whose diseases may excite disorders of the nervous system exactly as they do in men.

In spite, however, of my approval of the paper, I must say that my own experience compels me to utter a word of caution in regard to certain ocular defects which cause reflex neuroses in the form of headaches, or even more serious functional disorders. In many cases I have been convinced that astigmatism or a defective coördination of the optic muscles produced these conditions; but I feel grateful to the doctor for his paper, which attacks this fanaticism so vigorously.

Dr. H. N. Moyer, Chicago, Ill.:—While there is a certain element of truth in the reflex theory of disease, still I think it has been carried too far, and Dr. Bremer's paper is just what it ought to be. Dr. Goodell and other gynecologists are finding it out. There are a great many counterfeit conditions of the uterus and its appendages that are mere expressions of a general neurosis. I think the true principle lies between these two extremes. There is an immense amount of harm done by some men in looking for some little point of irritation in the special organs of which they treat, and the moment they find an array of symptoms they attribute them to that one thing.

Dr. G. Frank Lydston, Chicago, Ill.:—Mr. Chairman, in regard to what has been said of laparotomy being overdone and carried entirely too far, if I am not mistaken I was a pioneer in ridiculing that particular thing.

Dr. Hughes said the neurologist could teach the genito-urinary surgeon some things in regard to reflexes. I have no doubt about it, and that is precisely why I am here. A friend of mine asked why I was going to read a paper in the Neurological Section. I replied, "simply because I can get a more scientific discussion on my paper in this Section than anywhere else." I came here to learn, not to teach.

There are certain points regarding the abuse of gynecological operations, particularly with reference to the cure of mental phenomena, that have been suggested to me by practical experience. Recently I read in the Transactions of the Southern Surgical and Gynecological Association a report of some 30 laparotomies, successful and unsuccessful, reported by a Southern surgeon, in which he recounted a number of patients upon whom he had operated for the cure of mental phenomena. Of those who lived through the direct and remote results of the operation, several were cured, others were not, and still others committed suicide. One I believe, was cured at the end of a year, after operation. Such cures are probably cases of acute mania. I had an illustration of such a case in my own practice a short time ago. A young lady of extraordinary talent, with a high-strung hereditary nervous temperament, and extremely neurotic, became suddenly insane as a consequence of over study. I was called to see her, not knowing what I was going to find. I found her violently insane, and she had been in that condition for some little time. One of my professional friends with whom I conversed, took the ground that laparotomy was indicated, and that the ovaries ought to be removed. As I was interested in the family, I said, "we will wait a little." At the end of 18 months the young lady became perfectly well. I am satisfied that if I had not had a personal interest in the family, oöphorectomy would have been done, and the case cured—in a year and a half.

As far as my own position is concerned with regard to the reflex genito-urinary neuroses, I do not wish to be understood as trying to diagnose something out of nothing. I believe we have conditions of the genito-urinary organs—painful or otherwise—which produce effects upon the brain or nervous system in general. I believe that the diagnosis of reflex nervous irritation can not be thoroughly established until we can, as Dr. Hughes suggests, map out a definite relation between the source of irritation and the reflex. I do not believe ovarian irritation can produce a facial neuralgia any more than that the moon is made of green cheese. It is necessary for us to find the primary seat of irritation in order to justify a diagnosis of reflex derangement.

A certain gentleman attending this convention has had an experience in his own case, that shows a definite relation between a tendency to melancholia and nervous depression, and genito-urinary irritation. The case was treated for neurasthenia and other things by a well known neurologist in the city of Chicago. There was no explanation given as to the localization of this particular lesion. I happened to know that this gentleman had an irritable prostate. He subsequently came to me, I examined him and found an irritable meatus with chronic inflammation behind it. He also had prostatitis. Meatotomy with the application of nitrate of silver to the prostate gave the gentleman the greatest possible relief.

Dr. Hughes was vigorous in his condemnation of the theory of certain remote nervous disturbances being produced by cervical reflex irritation. How then must we explain those cases of obstinate vomiting in pregnancy, unquestionably due to cervical irritation, which are relieved by moderate dilatation of the cervix? There seems to be a direct relation between cause and effect under such circumstances. One point should not be overlooked with regard to the relation of irritation of the genital organs and remote functional disturbances. A comparatively slight irritation in this region will produce a disproportionate functional disturbance elsewhere because as we well know, there is no location in the body in which the sympathetic supply is richer than in the sexual organs. The structure of these organs proves conclusively, the greater importance of irritation of these tissues as compared with others with relation to the liability to reflex irritation of parts more or less remote from the primary disturbance.

Mignonette for Tapeworm.—In Russia the flowers of the mignonette are used as a remedy for tapeworm. A decoction of the flowers is made, and the liquid is drunk fasting. It is then followed with a dose of castor oil. The entire worm is rejected in a few hours.—*Pacific Record.*

RETINAL EXCITATION OF CORTICAL ORIGIN IN VISUAL HALLUCINATION.

Read in the Section of Neurology and Medical Jurisprudence, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

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The question to be considered under this title is: Does ideational activity of the cerebral cortex ever induce centrifugal excitation of sensory end-organs through their afferent sensory nerves, and thus lead to the sense of objectivity, or projection, that is the characteristic feature of hallucination?

For the sake of clearness, consideration of the question is confined to the sense of sight.

Quite commonly hallucination is made to include all phantasms that have no other than a subjective foundation; but to answer the present question, a stricter differentiation of subjective phantasms than the common definition implies, is necessary. Phantasms having a peripheral origin, though without objective, or external, cause, must be distinguished from those having a central origin. Following Emminghaus,[1] the former may be allowed to fall within the term *illusion;* and hallucination may be made to include only those phantasms that have a purely central origin.

In answer to the question of the occurrence of peripheral sensory excitation of central origin, authorities are not in accord, but the voice of affirmation is much stronger than that of negation.

The belief ordinarily entertained is that in an hallucination there is a backward nervous "current," from center to periphery, which perfects the sense of its objectivity.

The prevalent idea is an assumption; for, in the nature of the case, such a reverse "current" cannot be proved to occur; and we may therefore examine the ground upon which this assumption rests, and make a theoretical application of the principle it involves.

Emminghaus[2] says: "The assumption that in hallucination there is a nervous excitation that advances from center to periphery, rests essentially upon the fact that under certain circumstances, visual phantasms *change their location.*"

Krafft Ebing[3] states that with perfection of objective projection of an hallucinatory image, there is probably secondary excitation of the organs of sense involved.

Wundt[4] also holds to this view, basing his opinion upon the statement that visual hallucinatory images may excite after-images, as well as upon the fact that the phantasms move with movements of the eyes.

Sir David Brewster[5] believed that all hallucinations involved the appropriate sensory organs. Esquirol[6] promulgated the theory of the purely central origin and nature of hallucinations.

While D. Hack Tuke[7] thinks that cortical activity is in itself sufficient to produce hallucination, he still allows that the end-organs may be involved secondarily in some cases; and as criteria for the determination of secondary (?) retinal excitation he states as follows:

"If visual hallucinations present the same phenomena as those observed in luminous after-images, they may be regarded as involving the retina."

The phenomena referred to are that the phantasm cannot be artificially doubled; that it covers real objects; and that it moves with the motion of the eye. These phenomena include all the evidence of secondary retinal excitation that other authorities mentioned adduce.

But in visual hallucinations all these phenomena might be present without involvement of the retina at all; that is, they do not demonstrate that the retina is involved. For the visualization of a mental image not involving the retina would necessarily be projected in the immediate field of vision and cover objects in that field, or be fused with them. Thus while these tests will demonstrate whether a visual phantasm is of subjective or objective origin, in the nature of the case it cannot prove involvement of the retina, or at least that retinal excitation is of central origin, when the phenomenon is thus demonstrated to be subjective.

With primary subjective retinal excitation and secondary elaboration of the impression (illusion), we are not dealing here; phenomena of this nature are in perfect harmony with the physiological process of visual perception. It is only the possibility of the reverse process, with the primary stimulus having a central origin, that is here called in question.

Centrifugal excitation of the retina in visual hallucination is not a *sine qua non*. There is abundant evidence to prove that mental images undergo objective projection in the absence of the sense organs that would be involved. Where visual hallucinations have occurred with atrophied optic nerves, if centrifugal excitation took place the element of objectivity must have been supplied without the aid of the retina.

But let it be assumed, that a reverse stimulation occurs and affords the elements of distinctness and objectivity essential in hallucination. For the sake of clearness and simplicity, let it be assumed that the mental image is to be projected visually and involve one retina; that the mental image is that of an object of two dimensions of a given size situated a certain distance from the eye. Then, in accordance with the assumed premises, if this image be projected with an accompaniment of corresponding retinal excitation which assists in the induction of the sense of its distinctness, the retinal area excited must be exactly that area that would be stimulated if the actual figure were before the eye under the conditions of distance and dimension imposed.

In the absence of knowledge of any nervous mechanism designed to select nerve-fibres which shall convey the nervous excitation back to the retina, we may allow that cortical activity attending consciousness of the image in itself conditions such a selection of nerve-fibres as must convey to the retina excitation that distributes the stimulation there in the form of the image. In order that the image thus formed on the retina shall add distinctness to the mental image, it must, in the whole of its dimensions, be confined to the very limited area of the retina in which, as is well known, distinct vision is possible—the fovea centralis. For if the secondary retinal image were indistinct, as it would be, if disposed upon an indifferent retinal area it could not reinforce the distinctness of the mental image. If, for the

[1] Psychopathologie.
[2] Op. cit., pp. 156, 157.
[3] Lehrbuch der Psychiatrie, dritte Auft., p. 114.
[4] Physiologische Psychologie, Bd. ii, pp. 423, 433.
[5] Letters on Natural Magic.
[6] Maladies Mentales.
[7] Hallucinations and the Subjective Sensations of the Sane, Brain, Vol. xi, p. 41.

sake of distinctness, the retinal image must be confined to a certain limited area, and the necessity for this seems clear, then its objective projection would necessarily be like the projection of the distinct image on the retina when the eye is at rest. The apparent visual angle would be all that could assist in the projection of the secondary retinal image. But the visual angle in itself has no determining effect in developing an idea of space; and therefore in the assumed case it could alone have no effect in determining definite projection of the assumed centrifugally conditioned image. Therefore, the secondary retinal image, even though it correspond in form with the primary mental image, could not in itself condition an objective projection in harmony with the idea of objectivity with which the image is present in consciousness, and therefore, for distinctness of projection of the mental image, the aid of some other element than that supplied by the secondary retinal image would be required.

Now, let the hypothesis be complicated by bringing binocular vision into consideration; let the assumed mental image effect both retinæ. Then it must be assumed that the area of stimulation, in one retina, is physiologically correlated with the stimulated area of the other, in order to have perception of a single image. But in this instance, as in the preceding, the projection that results in that the images are identical, will be subject to the same conditions as obtained under the preceding assumption.

To still further complicate the matter, let the image, to be projected, be inverted with the third dimension.

An object having three dimensions seen in binocular vision impresses simultaneous images on each retina that are not identical, save when the object is seen in distant vision; in fact, an object of three dimensions viewed with convergence of the visual axes, may impress images on the retinæ that differ almost absolutely from each other. It is largely owing to the disparity of these simultaneous images of one object on two co-related retinæ, which undergo subjective fusion into one image, that the idea of the third dimension of the object is derived. Now, in the assumption of the reverse stimulation of the retinæ by a mental image of an object of three dimensions, it would not suit the purpose of the assumed secondary excitation were this single mental picture to be photographed identically on each retina; for then the objective projection of them would not possess that want of identity necessary for the induction of the sense of its third dimension. But a single mental image cannot be consciously resolved into two images from which the former might be derived, without having consciousness of two images successively; and it is therefore impossible to conceive, when the mental image is derived from two or more aspects of an object, how consciousness of the single image could condition a centrifugal excitation of co-related retinæ by disparate images. Here again the centrifugal retinal excitation would necessarily lack that determinateness to supply which it is assumed.

The fact is that all our reproduced mental images are complex simultaneous reproductions of a series of simple visual preceptions that were originally received in series and fused by association. The limitation of visual perception conditioned by retinal structure and function is in extreme contrast with the almost unlimited power of simultaneous reproduction in combination of serial, simple perceptions in memory. In the very nature of the case, then, a complex mental image could not condition a centrifugal excitation that is objectively impossible; the retinal excitation, were it to occur, would necessarily be simple, or at most but a reproduction of some element of the mental image. Thus exact simultaneous correspondence between the mental image and any secondarily induced retinal image, is impossible.

Under all circumstances, then, under which we can theoretically conceive a mental image as exciting a reverse "current" to the retina, there would be more or less disparity between the mental image and the resulting sensory excitation; that is, that additional quality with which secondary sensory excitation is presumed to supply the primary mental image for the sake of distinctness, is found to be so indeterminate, that if it were to occur it could only confuse the original mental image.

But if secondary excitation of the retina could not intensify the quality of distinctness in a mental picture, might it not, nevertheless, add the element necessary for its objective projection? Let it be assumed that it does. Then any visual sensation that does not correspond with the mental image present in consciousness is capable of adding the sense of objectivity: any elementary visual sensation, one as well as another, would serve the same purpose.

If this be true, what need is there to assume that there is any reverse sensory stimulation at all? The retina, like all sensory organs, is almost constantly subject to inadequate subjective stimuli, and any or all of these might aid as efficiently in inducing a sense of objectivity as an indeterminate stimulus travelling backwards.

Discussion.

Dr. Wm. Fuller, Grand Rapids Mich.:—Dr. Chaddock's paper reminds me of a case that came under my observation, in which a man was able to see two images with one eye—monocular diplopia. When both eyes were open he saw two images of the same object, a true one and another smaller one nearer to him, and placed a little above and to the right. When the left eye was closed both images were seen in the same position, but when the right eye was closed the true image only remained. With the right eye closed he could place his finger on the head of a pin at the distance of two or three feet from the eye, but with the left eye closed or with both eyes open he was unable to do so, on account of the uncertainty of the position of the object. There was paresis of the left extremities, especially of the arm. The man had received a severe blow on the right side of the head, over the coronal suture, about a month before, at which time he was unconscious for several hours. The diplopia was observed immediately upon the recovery of consciousness, and has remained up to the time of examination. In walking he lifts his feet high, as the floor appears to him to be elevated before him. The defect in vision was corrected by prisms and disappeared after a short time, about two weeks.

Dr. Welsh, of Grand Rapids, saw the case with me and reported: Distant vision, right eye, 20-30; distant vision, left eye, 20-30. Ophthalmoscope showed a normal fundus.

His opinion was that the false image was the relict of a mental impression which was forgotten after correction had been maintained for a sufficient period to efface it. The case is an interesting one, and I would like some gentleman present to give a satisfactory explanation of it.

The Chairman:—I have not seen a case like it, and am not aware that there is such a case described in literature.

Dr. James Taylor, of London, Eng., stated that such a case was reported in the Transactions of the Ophthalmological Society of Great Britain.

Dr. L. Bremer, of St. Louis, Mo., had seen two cases of monocular diplopia, one case being due to a cerebellar tumor. A number of other physicians saw this case.

Dr. J. H. Kellogg, of Battle Creek, Mich., also reported a case of monocular diplopia, and stated that ophthalmolo-

gists believe that such cases are due to irregularities of the cornea or crystalline lens. He had a case in which a man declared that he saw three images at one time with one eye, but these images were not always present. The speaker found only two objects present.

Dr. L. Bremer stated that the eyes of the individual whose case he had reported had been examined by a competent ophthalmologist and nothing had been found to throw light on the condition. The whole question of cortical vision is still very much mixed.

Dr. C. K. Mills, of Philadelphia, said the separation of the optical or cortical field of vision by some lesion might possibly furnish an explanation in some cases, but we have no definite knowledge in regard to these cases.

The Chairman:—I do not believe it is possible for us to have a diplopia through an affection of the cornea or lens. Displacements and disturbances of the lens are exceedingly common; but so far as I know, the condition under consideration is a very rare one.

EARLY NATIONAL LEGISLATION ON THE SUBJECT OF QUARANTINE.

BY STEPHEN SMITH, M.D.,
OF NEW YORK.

The approach of cholera again to our shores, will awaken a new interest in the character, management and efficiency of our quarantine defences against foreign pestilences. The crucial test which is now applied to our present system of State quarantines, and the evidences of their total inadequacy to meet a great emergency, will doubtless renew with great vigor the popular agitation in favor of a National quarantine organization. As a contribution to the discussion of that subject the following facts in regard to the efforts made in the first sessions of Congress may prove of interest, if not of permanent value.

On the organization of the Federal Government, in 1789, several of the sea-board States had quarantine laws and regulations of more or less efficiency. In most of these States the laws were originally adopted by the colonial governments, and in some they had been in effect for nearly a century. South Carolina enacted a quarantine law as early as 1698, Pennsylvania in 1699, Rhode Island in 1711, New Hampshire in 1714, New York in 1758. These early laws were chiefly designed to prevent the importation of small-pox, though yellow fever and ship or typhus fever had attracted attention as diseases capable of transportation. Yellow fever had several times, but at long intervals, been epidemic in seaboard towns having a large commerce with the West Indies, as at Boston in 1693; Philadelphia in 1699, 1741, 1747, 1762; New York, 1702, 1743; Charleston, 1699. But it did not attract attention nor excite great public alarm until commerce with the West Indies, after the Revolutionary war, was fully established. From 1762 to 1791 the country was entirely free from yellow fever. This immunity has been attributed to the parliamentary acts known as the "commercial monopoly," and the war of the Revolution, which prevented all direct commerce with the West India ports and the United States. With the restoration of an active commerce with the West Indies yellow fever again began to make its appearance in those ports where this trade was most active. The first outbreak occurred in New York in 1791, in the West India shipping, and the pestilence proved very severe and fatal, and caused great public alarm. In 1793 it appeared in Philadelphia, and was then universally attributed to the shipping from the West Indies. The pestilence now began to excite public alarm, especially in neighboring cities having personal and commercial intercourse with Philadelphia. New York, Chestertown, Baltimore, and Annapolis took active measures, and finally established rigid land quarantines against Philadelphia. In 1794 it appeared in New York, Philadelphia, and Baltimore, and the public excitement was so great that there was a renewal of the land quarantines in various sections. In 1795 the fever again prevailed at New York and Norfolk, Va., and vigorous measures of protection were discussed and adopted by the authorities of other exposed towns. It would be impossible at this distant period to properly estimate the current events of the time when yellow fever first became widely epidemic at the close of the last century, had we not passed through a similar epidemic in 1878–'79. Then, as now, the disease was regarded as contagious and infectious, and all of the precautionary measures were designed to prevent the contact of the sick with the well. Maritime and land quarantines were established, and the latter was enforced with the shotgun. In most of the details the measures of prevention in 1793 were the same as in 1878, more than three-quarters of a century later.

In order to understand the first act of Congress relating to quarantine it will be necessary to refer to the exciting events of that period. The following extracts from the papers of that date, kindly furnished by Dr. J. M. Toner, of Washington, reveal the intense excitement of the communities living in immediate communication with the centers of infection.

In 1793 the citizen of "Chestertown," Pa., held a public meeting. Their first resolve was:

"It appearing to this meeting, from the information they have received, that the said disorder (an infectious disorder which at present prevails in the city of Philadelphia) has extended itself from Philadelphia to Trenton, Princetown, Woodbridge, and Elizabethtown, on the post-road to New York, it is the opinion of the meeting that the same has been occasioned by the stages passing through those places."

"2d. *Resolved*, therefore, That it is necessary and proper for the welfare of the inhabitants of this town that the stages should not pass through this place, and that notice of this resolution be given to the stage owner; and further, that if the said owner should refuse to comply with this resolution, that then the chairman shall call a second meeting to deliberate on and adopt such measures as self-preservation may in that case dictate and justify."

The mayor of New York, Richard Varick, issued a circular to the profession of that city, September 11, 1793, stating that "Great apprehensions are entertained by many of our fellow-citizens that, notwithstanding every prudent and legal precaution, the contagion of that distressing infectious disorder may be brought into this city by means of the open intercourse between the two cities, which cannot be lawfully interrupted by any power in this State." He informed them that a hospital had been provided for the sick, and requested reports in writing of every person arriving from Philadelphia who should be taken sick.

On the 17th of September, it appears that

"The corporation, at the request of citizens of New York, have come to a resolution absolutely to prevent all intercourse between this city and the city of Philadelpia, and for this purpose guards are set at the different landings with orders to send back every person coming from Philadelphia to this city; and if any persons shall be discovered to have arrived in this city after this date, it is the resolution of the citizens immediately to send them back."

On the 12th of September of the same year the

governor of Maryland issued a proclamation establishing a rigid maritime and land quarantine. One provision is as follows:

"And I have, with the advice of the council, thought further to direct that all persons coming to Baltimore Town, to Havre de Grace, to the Head of Elk, or by any other route making their way into this city from Philadelphia, or any other place known to be infected with the said disorder, shall be subject to be examined, and prevented from proceeding, by the person who will be appointed for the said purpose."

The plan of requiring each traveler to carry certificates of not having been recently exposed to the fever was also adopted, as appears from the following: On the 24th September, the citizens of Havre de Grace held a public meeting

"to take into consideration their exposed situation on the post-road from Philadelphia, where a malignant fever now rages with great virulence" and passed the following resolutions: 1. That it is our opinion that no persons should be suffered to cross the Susquehanna who do not bring with them certificates, signed by some magistrate, of their not having lately come from Philadelphia or any other infected place. 2. That the citizens of this place embody themselves and act as a guard at the lower ferry of the Susquehanna to prevent any person crossing that does not come with the above certificate.

In other instances travelers were questioned under oath as to their recent movements. The corporation of Annapolis, Md., passed an ordinance September 27, 1793, appointing a health officer and requiring him

"To examine upon oath or otherwise all strangers that may come to this city by water or in stages, and if, upon examination, he shall be of opinion that there is no reason to apprehend that the said disease, or any other malignant disorder, will be communicated or introduced by the person or persons so examined, he shall grant a certificate or certificates to that effect." Another officer was required "on Mondays and Fridays to attend at the entrance into the city by land and give information to the said health officer of the arrival of the stage." The inhabitants were forbidden to harbor any traveler who had not been examined, as follows: "That whatever inhabitants of this city, or the precincts thereof, shall after the publication of this by-law, take or receive into his or her house or family any person who shall come to the city in a stage, or any person who shall come to this city by water, until such person shall have obtained a certificate from the health officer of the city . . . shall forfeit and pay the sum of three pounds."

The inconveniences which travelers experienced by this land quarantine may be inferred from occasional letters of correspondents. A gentleman who left Philadelphia for the South, wrote, September 25:

"We were stopped about seven miles from Baltimore by armed men who used us with every indignity and hatred truly indicative of *malice prepense*. These detained us in the stage from five in the afternoon until ten the ensuing morning. During this interval one of these ruffians, who appeared to be a German, snapped his piece at one of our party who seemed inclined to leave the stage with the apparent design to go among the bushes near the road. This guard in their tender mercy were pleased to hand us a piece of dry cheese on the end of a pitchfork. After this quarantine we were permitted to go to Gray's Garden and thence to perform another for the space of two days and nights."

Another writes on the same date from Philadelphia:

"On Friday evening all the New York and Philadelphia land stages returned to this city with their passengers mortified and fatigued. They were refused a passage through New Jersey. One of the drivers had a very narrow escape with his life, being cruelly fired upon at Trenton; the ball passed within a few inches of his ears. No provisions were to be obtained on the road nor any accommodation of any kind even for the lady passengers."

In 1794 Philadelphia had an opportunity to retaliate upon Baltimore, where yellow fever prevailed severely. October 3, 1794, a public meeting was held in Philadelphia "to take into consideration the propriety of stopping all communication with the town of Baltimore during the present contagious disorder now raging in that place." At a subsequent meeting it was unanimously resolved "to stop the intercourse between this city and Baltimore, by land and water, on account of the contagious disorder now raging there; and a committee of twenty was appointed to see that this retaliation be carried into effect in such a way as to occasion the least possible injury to the public or breach of humanity to individuals." The governor of Virginia also issued a quarantine proclamation against all vessels from the port of Baltimore.

In 1795 Philadelphia also adopted a rigorous maritime and land quarantine against New York and Norfolk, Va., very much to the annoyance of New York. The governor of Pennsylvania, Hon. Thomas Mifflin, requested the Board of Health of Philadelphia, August 29, 1795, to inform him as to the prevalence of "a contagious disorder" in New York. The reply was that there was sufficient reason to believe that "a contagious fever" existed in that city, and that "the urgency of the case and the present anxiety of the citizens will justify" the stoppage of all intercourse between the cities. On August 31, 1795, the governor issued his proclamation, "with a sincere regret for the unhappy occasion," prohibiting for the term of one month, or until such prohibition shall by proclamation be lawfully removed, all intercourse between the said city of Philadelphia and the said city of New York and the said town of Norfolk, and any place or places within five miles thereof, respectively, as well by land as by water; the authorities of Philadelphia were directed,

"with all possible vigilance and lawful authority and power, to guard the various avenues or entrances into the city of Philadelphia by land and water, so that any person or persons having been in the said city of New York or the said town of Norfolk within the space of ten days, and attempting to transgress the said prohibition by approaching nearer to the said city of Philadelphia than five miles, shall be forthwith remanded to the place or places whence such person or persons respectively came."

On the 4th of September the New York board of health protested against the proclamation, and condemned the Philadelphia board for obtaining information through other channels than its own official records. The chairman of the health committee of the New York board, John Broome, wrote to the chairman of the Philadelphia board, Richard Zittermary, September 4, alleging:

"The committee are so thoroughly persuaded that any information the inspectors of the board of health may have received which can justify the proclamation in question is unfounded that they have directed me to request from you, as chairman of the board of health for the city and liberties of Philadelphia, copies of the several letters as far as respects such information, together with the names of gentlemen who wrote them, and to express a hope that on future occasions the inspectors of the board will do them the justice to believe them full as capable and equally disposed with any individuals of this city to give every necessary information on a subject so interesting to the happiness and interests of both places.

The Philadelphia board refused to comply, as it would be a breach of confidence.

The governor of New York, Hon. John Jay, addressed a letter to the Medical Society of New York, September 4, asking for information in regard to the alleged contagious disease. He said: "The procla-

mation, by exciting alarms and apprehensions throughout this and neighboring States and in foreign countries, naturally tends to produce embarrassments to the commerce of this city, and to interrupt that intercourse with the country which is at all times necessary to the convenience and interests of both." The Medical Society, through its president, Dr. John Carleton, acknowledged the prevalence of a fever in low situations having an easterly exposure, with virulent symptoms which characterize fevers of the malignant sort. But though "the sensibility of the public mind on a subject of this nature, giving reality to apprehension, converted the necessary efforts for security and prevention into sources of fear and terror," the collective opinion of the society was that the fever was slightly, if at all, contagious, and was the same that occurred annually, having been rendered more malignant by local causes.

Governor Jay communicated these facts to Governor Mifflin, but the proclamation was not modified, and expired by limitation.

The public feeling in New York in regard to the proclamation of non-intercourse with Philadelphia appears in the following extract, from the *Daily Advertiser*, New York, September, 7, 1795:

"The prohibition of intercourse between this city and Philadelphia is a proceeding very singular, and deserves severe animadversion. It is a measure that, to say the least, wears the aspect of a most unfriendly disposition, as it naturally tends to create unnecessary fears abroad, which may occasion an order for our vessels to perform quarantine in foreign ports to the great injury of our trade.

"It seems the board of health of Philadelphia reported to the governor the existence of a contagious disease in this city on the authority of private letters, without even writing to our health committee for a state of facts. This is a most extraordinary proceeding, when the reports of our committee have repeatedly informed the public that the epidemic now prevailing exhibits no decisive evidence of a specific contagion. Scarcely in one instance has an attendant on the sick taken the disease.

"This fact was known to the board of health and the governor of Pennsylvania, and yet the world is to be alarmed for the safety of Philadelphia, when the disease has not proved contagious enough to occasion any general alarm in New York. The disease is almost wholly local. Most parts of the city are entirely free from it. But one person died yesterday, and not more than five or six dangerously ill. In the name of common sense, must all the business of New York be impeded by the ill-timed inquiries of Philadelphia? Is this a generous return for $5,000 raised in New York to assist the suffering poor of Philadelphia during their great calamity? When dangers become real, will not the citizens of New York be alarmed? Let the public judge. The epidemic of this city is not a new disease. It is a disease that occurs more or less at this season in most of the sea-ports. It is not the disease that should occasion alarm, but its contagion, which depends mostly on local causes."

This protest of the New York papers seems very familiar reading in our time, and equally so the response of the Philadelphia correspondent of the *Daily Advertiser*. He writes, September 10:

"Our New York brethren, it seems, are very angry at the proclamation of our governor prohibiting the intercourse for one month, unless after ten days' absence, and complains that our board of health advised it, without writing to New York to obtain a state of facts. That they should be angry is very natural, but that the suspension of direct intercourse, for the present, take place, is no less just. The proclamation, however, was not issued before sufficient information was obtained of its necessity, though this did not come from the committee of health. On the contrary, every measure had been previously taken to have a true knowledge of the facts, and the result was that an epidemic fever raged in the upper part of the city, of which numbers died; that it was highly malignant, consequently there was every just reason to apprehend its introduction into this city, and self-preservation justified the measure adopted. The citizens of New York should recollect that the first alarm of this fever originated full six weeks since, and that it was not until two weeks past that the committee would even allow the existence of any fever than the common one of the season; that at least, when increasing mortality could no longer justify an attempt to conceal the truth, they did acknowledge the existence of an epidemic, but asserted its confinement to the upper party of the city. This was enough of itself, as it is ridiculous to suppose that a fever which had been gradually increasing for three weeks was not spread by contagion. The yellow fever of 1793 in Philadelphia was also chiefly confined for the first month to the neighborhood of its original appearance; the rest of the city was never more healthy, as is now rung in our ears constantly with respect to New York. But how did this fever of Philadelphia spread, and how is that now spreading at New York? We all know how positively the Baltimore committee denied last year that the yellow fever prevailed there: it was the bilious fever, fall fever, prevailing fever, unknown fever, every name but the right one was given it; thus it is at New York. It appears that both our port physicians wrote for the true state of the facts, and instead of these we have a lengthy disquisition upon the origin of contagion. . . . The citizens of New York should recollect that a burnt child dreads the fire, and that though the intercourse is prohibited, yet that humanity is joined with our precaution, and so far from firing upon their stages, denying the passengers any food but at the point of a pitchfork, and obliging them to sleep in the woods, nay even mixing the healthy with the sick upon Governor's Island, all of which were done to those from Philadelphia in 1793, the people of New York are merely prevented from coming nearer to this city than five miles, where they may meet with every accommodation and transact their business by letter."

Richmond and Petersburg, Va., quarantined against Norfolk. At a meeting held in Richmond, August 27, 1795, it was resolved:

That the committee appointed at a late meeting for the purpose be immediately authorized to engage a proper vessel and guards, and to lay such restrictions on the entrance of passengers, carriages, and goods, by land or water, into this city from Norfolk, or any other place infected with the pestilential fever now raging at Norfolk, as to them shall appear necessary."

Owing to the death of a person at Petersburg, who came from Norfolk sick with the fever, it seems that "guards are now placed out, to stop all persons coming from Norfolk to this town by land or water."

(To be continued.)

THE "BRITISH MEDICAL JOURNAL."—The success of the *British Medical Journal* has been almost phenomenal. Dr. Withers Moore, the past-president of the Association, recently expressed the opinion that such success was largely due to the management of the able editor, Mr. Ernest Hart, who, he said, had brought *The Journal* to such a pitch of excellence that it was a sort of model journal for all the medical journals throughout the world. The staff is a large one, and includes Dr. Dawson Williams, who is an able assistant to Mr. Hart. Mr. Fowke, the general secretary, is said to have great business and executive capacity The revenue from advertising during the last year was $70,000, a very respectable sum, and quite an assistance to a journal of any description. In addition, the sums received for subscriptions and sales of *Journals* amounted in the aggregate to over $80,000 during the year. The total annual revenue is now about $155,000.—*The Canadian Practitioner.*

ANOTHER MEDICAL PRINCE.—At the University of Edinburgh, the medical commencement was held during the first week in August. Among those who received the degree of bachelor of medicine was an Indian prince, Sir Baghvat Singh Jareja, the Thakore Sahib of Ghoudal. He is said to be the first native prince of Hindustan to acquire that particular degree, or any other Scotch medical diploma. His subjects purpose to signalize the unusual event by erecting a statue to their ruler, in his capitol in Ghoudal, in which the newly made Medical Prince will appear in the gown and hood of his degree, worn over his full native costume.

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SATURDAY, SEPTEMBER 24, 1892.

INTESTINAL ANTISEPSIS.

In view of the greatly extended scope and the added accuracy in prognosis with which surgery and midwifery have been, almost recently, endowed, comes the consideration of the possible utility and value of similar methods in other branches of medical science. After passing such prominent landmarks as the specific action of quinine in malaria and the salicylates in rheumatism, probably the intestinal canal offers the widest field for research. The lines upon which procedures may be laid against intestinal parasites are: *first*, the mechanical method, or that by evacuants; *second*, the antiseptic, or direct destruction and *third*, the neutralizing, or an antitoxic disposal of the ptomains produced in the canal. Calomel, for instance, may fulfill all the indications, while naphthalin could be placed only among antiseptics. FURBRINGER and BOUCHARD have studied the production and destruction of such intestinal poisons. BOUCHARD has classified intestinal antiseptics as those that are freely soluble, those that pass into solution with difficulty or remain insoluble, and lastly, those that permit of chemical change into new compounds having special advantages. Phenol, calomel and salicylate of bismuth may be severally accepted as examples of these divisions. This writer has especially maintained that of these the insoluble compounds are most useful. According to his reasoning, the best results are to be obtained from a finely pulverized insoluble drug, that may act throughout a long distance, and one administered in often repeated small doses.

The experimentation of ROSSBACH with salicylate of bismuth would strongly strengthen the theoretical efficacy of an antitoxic treatment.

That the value of the treatment of intestinal diseases with antiseptics is not yet established, may be judged from a review of recent experiments on the bacteriological condition of the digestive tract and of the fæces during health and disease. While SALKOWSKI shows a marked decrease in the number of colonies incident to the administration of chloroform; and while FURBRINGER shows somewhat irregular results, but results which, in the main, give from five to twelve thousand colonies less per gram of fæces, with than without the administration of naphthalin and calomel, STERN, in a very careful and complete investigation, apparently overturns previous conclusions.

STERN conducted his experiments upon a recently approved method. As a test bacterium the *B. prodigiosus* was employed. This microörganism offered peculiar advantages. It is innocuous, has a resisting power similar to the typhoid bacillus, can live at body temperature and in a slightly acid medium, and upon the plate, is easily recognized by its color. The trial patient was put upon a special diet. When the bowels moved an examination for *prodigiosus* was made, the result being uniformly negative. Then an ample quantity of prodigiosus culture was administered and after two hours followed by the antiseptic in question. This was continued at regular intervals until the end of the experiment. Calomel and naphthalin in 25 grain doses showed no influence upon the appearance and disappearance of the *prodigiosus* colonies from the intestine. Camphor, chloroform and iodoform likewise gave negative results. The great care in the manipulations and in the tabulation of the results, certainly entitles these experiments to be considered reliable; but their value, as the author himself admits, is not conclusive. On the one hand, in spite of the fact that the *B. prodigiosus* offers a similarity to *B. typhosus* yet it is hardly reasonable to assume that the conditions within the intestine are the same for the saprophyte and the parasite. On the other hand, an antiseptic may give one reaction to a medicament in artificial media, and another, quite different reaction in the intestinal tract.

So far as making determinations for the pathogenic bacteria themselves many obvious difficulties at once render the subject impracticable because animals are not available. What would be invaluable data from experiments on man are entirely beyond our reach.

The demonstration of a few thousand colonies, more or less, of entirely harmless saprophytes in the intestine after the administration of an untried drug cannot be taken as sufficient reason to lay aside a line of treatment that has so many theoretical and clinical advantages. The theory is that known anti-bacterial drugs, when introduced into the digestive tract, there exert their antiseptic properties.

BAUMANN measures the activity of albumen decomposition by the amount of iodol, skatol and kresol produced. For pathogenic bacteria, the severity of

the general symptoms should be in direct ratio to the amount of ptomains produced, and therefore indicate their quantity and quality. That the general symptoms of such diseases as cholera and typhoid are modified by intestinal antiseptic treatment, is evidence that some influence has been brought to bear upon the intestinal contents. That the general mortality from typhoid fever in the Paris hospitals was reduced from 35 per cent. to 18 per cent. by the use of salol and chloroform, besides the advantage of this method of treatment in minor cases of gastritis and gastro-enteritis, is still ample enough proof that antisepsis in the intestine is not without a purpose.

CHOLERA.

Since our last issue a very few cases of cholera have been developed in New York and its vicinity, but in each instance the physicians in attendance with the coöperation of the public health authorities have been able to prevent any further spread of the contagion. We have in this a full and complete proof of the value of quarantine as a protective measure against the introduction and spread of this disease.

This epidemic has shown to the world that the researches of scientific physicians have developed a positive knowledge of the cholera poison and of its method of spreading from one individual to another. That it is solely through an introduction of the poison into the alimentary canal, and is neither inhaled nor absorbed through the skin. Hence it is, that the infection is always from the use of a cholera contaminated water or food supply. We now know that the comma bacillus is able to live for a considerable, perhaps an indefinite length of time in water that is impregnated with organic or vegetable matter.

On account of its sponge-like absorbing powers, milk is one of the most frequent sources of the infectious poison, because of its almost universal use as an aliment by infants and children.

DR. SHAKESPEARE, of Philadelphia, has made most critical observations of the cause, course and spread of the disease, from which he formulates two laws bearing upon its spread, viz.: (1) The tendency to infection varies exceedingly among individuals, and is with the majority small. (2) Disturbed conditions of the digestive apparatus greatly increase the susceptibility of an individual, and render him more liable to an attack after exposure to the infection. From which he teaches that a healthy stomach secreting normal acid juices, is capable of destroying this infectious bacillus. If, however, this living infectious bacillus escapes beyond the lower end of the stomach and passes into the small intestine, the contents of which are alkaline, multiplication with enormous rapidity takes place, and the disease is established.

From which we learn that certain acids destroy or render the comma bacillus innocuous. Hydrochloric acid, taken in small doses during or after meals, will add to the antiseptic powers of the gastric secretions. Irregularities of diet, alkaline drinks, loss of sleep, emotional excitement, fear, mental depression, and every disturbing influence, should be so far as possible avoided, as they weaken the powers of resistance that should naturally exist in every healthy individual.

These conditions will not in any instance, in and of themselves produce cholera, but they do render the individual so susceptible, that if exposed by the passage of the infectious bacillus into the alimentary canal, an easy victim to its virulence. The positive knowledge of physicians as to these facts should cause them to faithfully instruct all health boards and public officers in their duties in enforcing upon the people the extreme importance of absolute quarantine measures in every case of cholera; of the vital necessity of a pure, uncontaminated water supply, and of attention to the preparation of food. Special watchfulness should be exercised over the food and drink of children.

Every school, public and private, should receive the practical attention of a physician, who should formally talk during a school hour to the assembled children and teachers of their duties in this regard.

This should be done with much care and tact, so as not to create a feeling of fear, or mental anxiety, but to produce a sensation of security, rest and assurance of safety for those who follow the doctor's directions. These directions are neither a hardship or a task so severe as to be difficult to carry out. The children should be taught the danger of dirt, that filth and dirt cause sickness; that sickness means pain, suffering, misery, hard times, less education, poverty and poor living; that dirt conduces to a lack of self respect and promotes bad morals; that this cholera epidemic, like every other cholera epidemic, was generated, born in filth, spread through the medium of filth and now threatens us through impure water and improperly prepared food, and the handling of dirty substances; that absolute cleanliness of person, of houses and grounds, pure water and wholesome freshly prepared food are a combined bulwark and fortification that is strong to resist an attack of this insidious enemy.

The use of hydrochloric acid diluted as a drink at meals, and the avoidance of other drinks commends itself most highly as a prophylactic agent. A remedy referred to by DR. STEWART, of Philadelphia, that might be used where it is suspected that infection might occur, is hydronaphthol. This is a remedy that is valuable in cases of intestinal disturbances of various kinds, which are induced by fer-

mentative processes. Hydronaphthol may be given as a prophylactic in doses of from three to five grains, largely diluted in water, three to five times a day. Hydronaphthol is almost a specific in the treatment of dysentery, and is a valuable agent in all cases of enteric disease. Peroxide of hydrogen is another remedy that will no doubt be of great value in the treatment of cholera. It is all important that the prodromic stage should be recognized and treated as cholera.

PIPERAZINE IN GOUT.

The popular knowledge in regard to the new "gout-water," containing piperazine, is spreading, and laymen in the horse-cars have been overheard discussing the merits of the water. But it is not yet so widely understood that there are other forms of the drug in addition to the aqueous solution of the hygroscopic crystals: for example, the *Notes on New Remedies* in its Berlin letter, informs us that the chemists have been enabled to produce tablets of piperazine. These compressed tablets contain the ordinary daily dose of 15 grs. They are easily disintegrated and dissolved in water, a manifest convenience in the case of travelers and vacation seekers. A granular effervescing powder has also been produced: in this form, the drug is said to be more palatable—although the crystals should be nearly tasteless—and the patient is led to imbibe more freely of water than he otherwise would—a point which is helpful in bringing out the best effects of the piperazine treatment.

Dr. Schweninger, the well-known medical friend of Bismarck, has recently made known his experience with the drug in over one hundred cases. He states emphatically that piperazine has given relief to cases of both acute and chronic gout to an extent that has been an agreeable disappointment. No remedial substance has done so much for gouty patients, in many years of trial of many remedies, as has this new product. He considers it "an exceedingly valuable addition to our treasury of medicaments." It has succeeded in cases where "all other remedies" have been tried in vain. The relation of piperazine to uric acid has been stated in the following terms: "It has the power of dissolving twelve to fourteen times as much of that acid as lithia will dissolve."

One important point in the use of piperazine for chronic gout is regular and persistent dosage. The remedy cannot be pushed, neither can it with advantage be experimented with in a haphazard way. It requires considerable time to dissolve out the uric acid from the system, even longer than is required to quell the painful symptoms of the disease.

PAN-AMERICAN MEDICAL CONGRESS.

The Committee on Organization of the Pan-American Medical Congress will issue the preliminary announcement of the Congress within a few weeks. This announcement will show that the organization has been perfected in almost every colony and country of the Western Hemisphere. The local medical societies in each of the constituent countries are made auxiliary to the Congress, which will be held in Washington, D. C., September 5, 6, 7, 8, 1893.

Dr. Reed, of Cincinnati, Secretary-General of the Congress and Chairman of the Committee on Organization, announces that after extended correspondence between himself and Dr. Maragliano, of Genoa, General Secretary of the International Congress, the date of the Rome meeting has been finally and definitely set for September 24, of next year. This gives an interval of sixteen days between the Washington and the Rome meetings, during which time an easy trip can be made from the former to the latter city. It is possible that a steamer may be chartered direct from New York to Rome.

EDITORIAL NOTES.

Keeley's Lawsuits.— Dr. Keeley has concluded to part with some of his golden gains to the legal fraternity of London. He has entered libel actions against the *Lancet* and the *Press and Circular*, in order to punish those journals for calling him a mischievous quack and inducing the friends of temperance to withdraw their partly promised support. The *Press and Circular* refused to publish Dr. Keeley's letter of vindication or explanation chiefly because the writer advanced no proof corrective of the "bad impression created by the almost universal condemnation of the so-called cure in the United States." Dr. Keeley is urged by these journals not to delay his actions for libel, and they promise to show him up.

Ownership of Prescriptions.—A recent trial in a Detroit court resulted in placing the ownership of prescriptions in the hands of the patient and not in those of the pharmacist. Testimony going to show that druggists everywhere regard the prescription as their rightful property was excluded, on the ground that the patient has the highest claim to the written formula.

Prize on Infant Therapeutics.—A bequest of Dr. Henry Roger, late of Paris, will put the French Academy of Medicine in possession of a fund, yielding one hundred dollars per annum, to be devoted to the purposes of a five-yearly prize. An award of $500 will be made for the best essay on the medical treatment of children.

An Anti-Cancer League.—Dr. Verneuil, of Paris, is said by the *Medical Press and Circular* to be the moving spirit of an association of prominent medical men, whose object is to attack the subject of cancer in concert and from all directions. The program has been devised with the utmost liberality by M. Verneuil, and he has succeeded in obtaining the cordial support of many of the best of his compatriots. Prizes and grants of substantial assistance will be made whenever deserved, and published records of work performed will be provided for whenever any advance shall have been made. Membership in the League has been fixed at about four dollars per annum; while sixty dollars will constitute

subscribers to life membership. All that is needed, therefore, to ensure success, seems to be an active sympathy on the part of the profession which will bring into the movement a large number of working members, and of non-workers as well, all actuated with a zeal to overthrow cancer. There will be a small body of officers; as for example, there will be a central committee with a medical, and a surgical, and a general secretary; a similar officer will represent the department of experimental and regional pathology; also a treasurer. The coöperation is desired of all pathologists, clinicists, biologists, microbiologists and veterinarians. All explorers and geographers will be invited to obtain facts bearing upon racial and climatic peculiarities in the distribution of the disease.

It is expected that if the work moves along conformably to the plans laid down by M. Verneuil, a rich harvest of facts will be reaped, and there will be eventually congresses held upon the subject, and discussions organized upon all the causal and preventive questions therein comprised.

There is no obstacle against the formation of other Leagues in other countries, along similar lines of activity, and a cosmopolitan aspect might be added to the work of the Parisian committee, if a goodly number of large cities should volunteer to join in the same crusade against a foe that has recently been growing in strength.

THE NORTH CAROLINA BOARD OF HEALTH.—The *Bulletin* of this State Board contains a notice of the great loss "the old North State" has sustained in the decease of Dr. Thomas Fanning Wood.

The following changes in the *personnel* of the Board are announced to have taken place in consequence of Dr. Wood's death: "At a called meeting of the North Carolina Board of Health held in Wilmington, on September 7, 1892, Dr. George Gillet Thomas, Wilmington, N. C., was elected as a member of the Board to fill the unexpired term of Dr. Thomas F. Wood, deceased. Dr. Richard H. Lewis, Raleigh, N. C., was elected Secretary of the Board, and to him all communications should be addressed after October 1, 1892."

SOCIETY PROCEEDINGS.

American Association of Obstetricians and Gynecologists.

Fifth Annual Meeting, at St. Louis, Mo., Sept. 20–23, 1892.

Dr. George H. Rohé of Catonsville, Md., read a paper upon

THE RELATION OF PELVIC DISEASE TO PSYCHICAL DISTURBANCES IN WOMAN.

The author pointed out the frequency with which bodily conditions influenced mental states. Thus a torpid condition of the intestines, Bright's disease, putrefactive processes in the intestinal canal, etc., might give rise to melancholia and other disorders of the mental functions. It is not irrational to suppose likewise that diseases of the female sexual apparatus would have a not inconsiderable influence in the production or perpetuation of mental disorders. As a contribution to the knowledge of the subject the following report was submitted:

In a hospital containing 200 insane women, 35 were subjected to vaginal examination and 26 found with evidences of pelvic diseases. In 18 of these the uterine appendages were removed with the following results:

Sixteen recovered from the operation and two died. Of the 16 recovered, three have been discharged from the hospital completely restored, both physically and mentally. In 10, considerable improvement followed the operation in both physical and mental conditions, and in 3 the operation was of too recent a date to allow any definite expression of opinion.

The mental disorder present in the 18 cases was melancholia in 6 cases, simple mania in 1, puerperal mania in 1, hysterical mania in 1, periodic mania in 2, hystero-epilepsy with mania in 1, and epilepsy with mania in 3.

The author basing his opinion upon his experience, concludes as follows:

"The facts recorded demonstrate first: that there is a fruitful field for gynecological work among insane women; second, that this work is as practicable and can be pursued with as much success in an insane hospital as elsewhere; and third, that the results obtained not only encourage us to continue in the work, but require us, in the name of science and humanity to give to an insane woman the same chance of relief from disease of the ovaries and uterus that a sane woman has."

Rufus B. Hall, M. D., Cincinnati, Ohio, read a paper entitled

A CLINICAL REPORT OF GALL BLADDER OPERATIONS.

He reported 7 cases, all of the gall bladder operations that he had made. In three of which the common duct was obstructed from 3 to 7 and 9 weeks respectively. The case with obstruction for 3 weeks recovered from the operation. The case with obstruction for 7 weeks had gall stones for 3 years before operation and at the time of the operation had a stone impacted in the common duct, and malignant disease at the head of the pancreas and obstructing the common duct. The case with obstruction for 9 weeks had a stone so firmly impacted that he had to incise the common duct for its removal. The three cases were in extremus at the time of operation from the long continued cholæmia. The cases with obstruction for 7 and 9 weeks died from exhaustion on the 3rd and 6th days after the operation. The remaining cases in which the cystic duct was obstructed recovered, making five recoveries and two deaths. With the light of his experience the author would hesitate to advise an operation in cases where there had been complete obstruction of the common duct for 7 to 9 weeks. The power of recuperation in such profound and continued cholæmia is so feeble that we can hardly hope for other than a fatal termination. The author of the paper is strongly inclined to the opinion that there is a causative relation between gall stones and malignant disease in and about the gall ducts and head of the pancreas. He thinks that the long years of continued irritation from the presence of gall stones and the consequent repeated attacks of hepititus favors the development of malignant disease in and about the gall ducts. He urges early exploration in obscure hepatic disease of a number of years' standing, even if a positive diagnosis of gall stones cannot be made, and cites a case in which he removed 91 gall stones under similar circumstances. In that case the patient had pain in the region of the gall bladder and liver but no other signs of gall stones. If early operation was made there would not be so many cases of obstruction of the common duct with the high mortality following that complication. If all of the cases operated upon where the common duct was obstructed could be tabulated, the mortality would probably be very great. On the other hand, the operation in cases where the common duct is not obstructed the mortality is very small. These facts should be sufficient to warrant early exploration.

HONORS TO HUXLEY.—The members of the medical profession will receive with lively satisfaction the announcement of the appointment to a seat in the Privy Council of Professor Huxley.

SELECTIONS.

THE TEST FOR THE COMMA BACILLUS.—In view of an impending epidemic of cholera in this city, and probably in the greater portion of the other cities this side of the Atlantic, I desire to give your readers the usual method of examination of dejecta of suspected patients as practiced in the Bacteriological Institute at Berlin last summer.

The articles necessary for the examination are: 1. A microscope with Abbe's condenser and the oil-immersion system. 2. A solution of fuchsin 1 gm. (Rubin) in 90 cc. distilled water and 10 cc. alcohol. 3. A few pipettes, glass rods, object-glasses or cover-glasses, and slides. 4. A few platinum wires melted or soldered to the end of glass rods. 5. A few hollow slides. 6. Ten to twelve glass plates or glass panes about 12 ctm. long and 9 ctm. wide. 7. About a dozen ordinary flat plates. 8. An alcohol lamp, or gas being preferable, a Bunsen burner. 9. A number of test-tubes with sterilized gelatine. 10. A number of test-tubes with sterilized nutrient bouillon. 11. A few Erleymer's glasses, about one-third filled with 1 per cent. pepton solution; 1 gm. pepton, 0.5 gm. chloride of sodium, 100 gms. distilled water. 12. Concentrated sulphuric acid.

The dejecta of suspected patients are scattered in as thin a film as possible on a plate, and this is carefully examined with the aid of a platinum wire for a mucous flake, "Schleimflocke," which is laid on the edge of the plate and isolated.

From this we take a piece the size of a pin's head, and sterilize a platinum loop (by drawing it through a Bunsen burner), and then rub it on a cover-glass until it is evenly divided; then remove all superfluous material by pressing another cover-glass over it, and allow it to get air-dry.

Then draw it three times through a Bunsen burner in the same manner as we proceed in the examination of sputa for tubercle bacilli, and by means of a pipette add a few drops of the fuchsin solution for about one to two minutes to the cover-glass, and then wash it off in distilled water. Then add a drop of water to the cover-glass, lay it on a slide, and examine it with the oil immersion system.

If we wished to preserve the specimen we could, after staining with the fuchsin solution, wash off the excess of stain with distilled water, and allow it to get thoroughly air-dry, then add some Canada balsam.

In some cases called "foudroyant," where the intestinal contents have a colorless or pale red color, with slimy (mucous) flakes or with a flour-soup mass, we will frequently find, especially, however, in the reaction period with cases running a slow course, no mucous flakes, but large quantities of blood. Here there are, besides cholera bacilli, large quantities of other microörganisms, and sometimes only the cholera bacilli sparingly, so it is advisable, to render a diagnosis absolutely positive, to add to microscopical examination the examination by the aid of "cultures."

Cultures can best be made in "hollow slides" by smearing the border with vaseline, then bringing a small drop (from a platinum loop) of sterilized bouillon into this hollowed groove of the slide, and inoculating this latter bouillon with the smallest possible particle of the suspected mucous flake. The cover-glass is carefully laid on the vaseline, which serves to render the groove air-tight, and also prevents the evaporation of this drop of sterilized bouillon, which is then laid aside in a temperature of 20° to 22° Celsius. The room can be heated if the temperature of the air is below this. It takes about twenty hours to have the bouillon turbid, and this slide (hollowed. containing the infected bouillon) can be examined with the oil-immersion without disturbing the culture. The best place to examine is the border line, and even if but few cholera bacilli were formerly present, they grow so rapidly that they will be easily recognized by their curved shape.

Culture Method by Schottelius: Take 100 to 200 cc. of the suspected dejecta from intestinal contents, and place them in a beaker glass containing 250 to 500 cc. of mild alkaline meat bouillon, and mix thoroughly; then let this mass stand about twelve to twenty-four hours at a temperature of 30° to 40° Celsius. After this time the cholera bacilli have usually increased in numbers, and are found on the upper layer of the fluid. By introducing at the upper layer a platinum loop, and taking out a small drop (about the size of a lenten seed), and rubbing it on a clean cover-glass, we allow it to dry thoroughly (air-dry); then draw it three times through a flame to fix it, and finally stain, as previously described, with the fuchsin solution.

Post-mortem Tests: To examine suspected intestinal contents I open the abdominal cavity carefully and ligate, with aid of two stout cords or twine, a piece of the ileum (about 3 to 4 centimetres in length), well filled with fecal contents, near the cæcum. It is well to apply a ligature close to the upper ligature, and another below the lower ligature, and cut between the two ligatures, so that the intestinal contents will not be spilled in the abdominal cavity and prevent the completion of the autopsy. It is well to cut out a piece of the intestine, about 3 to 4 centimetres in length, from the upper portion of the ileum, and to lay the excised portions into ordinary water until ready for use, *i. e.*, examination of contents. The method is the same as has been described, *i. e.*, take a small piece of flocculent mucus, about the size of a pin's head, and examine it. Gelatine stroke and stick cultures, and also potato cultures, can be made for examination. They also grow on blood serum and agar.

A practical point is the following: Koch found cholera bacilli in the water of an East Indian tank. But it is the rule that the cholera bacillus does not develop very much in our ordinary water, owing to the presence of other bacteria which easily destroy the cholera bacillus; but they do develop marvellously in sterilized water (water free from bacteria); so, for instance, soup is an elegant medium for their development.

Human beings are usually infected through the mouth—*i. e.*, through food, etc.—and it is found that if the stomach is partly filled and has sour reaction (gastric juice), the latter acts as a barrier to the infectious material.

Cholera bacilli require for their growth a mild alkaline nutrient medium, and are very sensitive regarding mineral acids.

By adding 0.07 to 0.08 per cent. of muriatic or nitric acids to a neutral nutrient solution the growth of the bacilli was stopped. This statement is found in Günther's Bakteriologie, p. 210, and is made by Kitasota.—LOUIS FISCHER, M.D., in *N. Y. Med. Record.*

IT IS A noteworthy fact that not a single case of smallpox occurred during the year 1890 in the British Army. If this be not evidence of the protection afforded by re-vaccination against a malady once so common—and still disastrously fatal in armies where this precaution is not vigorously enforced—then logic and reason are mere accomplishments.—*Medical Review.*

UNFIT FOR COLONIZATION.—An agent of Baron Hirsch reported that the Jewish peasants in the Odessa district are so degraded that the Argentine Republic would not allow them to be sent to the Jewish colony there, and that it is therefore expected that they will be sent to the United States.

BOOK REVIEWS.

A MANUAL OF DISEASES OF THE NERVOUS SYSTEM. By W. R. GOWERS, M.D., F.R.C.P., F.R.S. Second edition, revised and enlarged. Vol. 1, Diseases of the Nerves and Spinal Cord. Philadelphia: P. Blakiston Son & Co.

The work of Dr. Gower's in its first edition has been so long before our readers that we do not think an extended and critical review of these pages is needed at this time. The title page says that this second edition is revised and enlarged; a comparision with the older work shows that indeed it is a new edition and not a reprint, as is too often the case.

A careful examination shows that the author has brought to his task a wealth of clinical experience and such a profound grasp of the philosophy of medicine, that his work easily ranks first among the English treatises on diseases of the nervous system.

The typography of this, the American edition, is only fair, the paper is poor, and the cuts are most of them blurred and indistinct. It is to be regretted that so valuable a work does not come to us in a better dress.

MISCELLANY.

S. D. GROSS MONUMENT FUND.—Dr. John B. Roberts, Treasurer of the American Surgical Association, acknowledges the receipt of the following contributions to the Gross Monument Fund. Contributions are hereafter to be sent to the Gross Monument Committee of which Dr. J. R. Weist, of Richmond, Ind., is Chairman.

Dr. Douglass Graham, Boston	$ 5
Dr. Solen Marks, Milwaukee	20
Dr. L. C. Lane, San Francisco	50
Dr. A. H. Plummer, San Francisco	20
Dr. C. Cushing, San Francisco	20
Dr. O. O. Burgess, San Francisco	20
Dr. Jos. O. Hirshfeider, San Francisco	20
Dr. L. L. Dorr, San Francisco	20
Dr. Jas. Simpson, San Francisco	20
Dr. Henry Palmer, Janesville, Wis.	10
Dr. Gibson, Janesville, Wis.	5
Dr. Mills, Janesville, Wis.	5
Dr. Pember, Janesville, Wis.	5
Dr. Whiting, Janesville, Wis.	5
Dr. Robt. McLean, San Francisco	50
Dr. Francis L. Town, U. S. Army	20
Dr. Basil Norris, U. S. Army	20
Dr. G. L. Simmons, Sacramento	1
Dr. C. L. Simmons, Sacramento	1
Dr. N. R. Cluness, Sacramento	1
Dr. N. R. Cluness, Jr., Sacramento	1
Dr. C. B. Nichols, Sacramento	1
Dr. A. E. Brune, Sacramento	1
Dr. M. H. Woolsey, Sacramento	1
Dr. G. A. White, Sacramento	1
Dr. C. E. Fowler, Sacramento	1
Dr. W. H. Baldwin, Sacramento	1
Dr. M. Gardner, Sacramento	1
Dr. T. W. Huntingdon, Sacramento	1

DR. C. F. MCGAHAN, Chattanooga, Tenn., has removed to Aiken, S. C.

DR. DAVID STAINROOK BOOTH died at his home in Marissa, Ill., September 10, aged 64 years.

TRI-STATE MEDICAL SOCIETY.—The regular annual session of the Tri-State Medical Society of Illinois, Iowa and Missouri will convene at Kahoka, Mo., Tuesday, Oct. 4, 1892. Members of the profession are cordially invited to be present.

1. Roll call; 2. Reading of minutes; 3. Proposals for membership; 4. Report of committee on credentials; 5. Resolutions introducing new business; 6. Selection of next place of meeting; 7. Reports of special committees; 8. Report of treasurer; 9. Election of officers; 10. Miscellaneous business; 11. Reading of papers.

List of papers:

1. Uterine Fibroids and their Treatment, by J. H. Beucler, M.D., Revere, Mo.
2. Dietetic Treatment of Dyspepsia, by J. R. Hollowbush, M.D., Warsaw, Ill.
3. Sanitary Science *vs.* Epidemics, by Geo. P. Neal, M.D., Ft. Madison, Iowa.
4. Thaumaturgy in Medicine, by J. M. Shaffer, M.D., Keokuk, Iowa.
5. Intussusception, by J. H. Coulter, M.D., Summitville, Iowa.
6. A Case of Purulent Pleurisy, by H. C. Young, M.D., Bloomfield, Iowa.
7. Professional Secrets, by W. R. Allison, M.D., Good Hope, Illinois.
8. The Physician and his Compensation, by O. F. Pile, M.D., Memphis, Mo.
9. Variations of Gestation, by T. C. Hays, M.D., Vincennes, Iowa.
10. The Hæmatozoan of Malaria, by J. Fred Clarke, M.D., Fairfield, Iowa.
11. Operative Treatment of Intra-Cranial Lesions, by C. E. Ruth, M.D., Muscatine, Iowa.
12. Obstetrics, by Calvin Snook, M.D., Fairfield, Iowa.
13. The Physician as an Educator, by W. V. English, M.D., Keokuk, Iowa.

J. M. BALL, M.D., *Sec'y.*

THE MISSISSIPPI VALLEY MEDICAL ASSOCIATION will hold its eighteenth annual session at Cincinnati, Wednesday, Thursday and Friday, October 12, 13 and 14, 1892. The program is a valuable one, containing many of the most prominent names in the profession our country affords. It covers every department in medicine. The attendance will be unusually large, as Cincinnati is the centre of population of the United States. Not only the scientific, but also the social part of the meeting will be of the highest order. The interest of the Convention will be augmented by the meeting of the gentlemen interested in the Pan-American Medical Congress, also other bodies of medical men. Dr. Benjamin Ward Richardson has written his earnest desire to be present. The Association will be just in time and just in line for many of the gentlemen *en route* for the American Public Health Association in the City of Mexico. Among the many prominent gentlemen who are expected to read are the following: Dr. Hunter McGuire, Richmond, Va., President of the American Medical Association, the address on Surgery; Dr. Hobart Amory Hare, Professor of Materia Medica, Jefferson Medical College, Philadelphia, the address on Medicine.

C. A. L. REED, M.D., President, Cincinnati.
E. S. MCKEE, M.D., Secretary, Cincinnati.

OFFICIAL LIST OF CHANGES in the Stations and Duties of Officers Serving in the Medical Department, U. S. Army, from September 10, 1892, to September 16, 1892.

By direction of the Acting Secretary of War, a board of medical officers, to consist of Lieut.-Col. Chas. H. Alden, Deputy Surgeon-General; Lieut.-Col. Geo. M. Sternberg, Deputy Surgeon-General; Lieut.-Col. Wm. H. Forwood, Deputy Surgeon-General; Capt. Wm. F. Carter, Asst. Surgeon, is constituted to meet in New York City, on October 3, 1892, for the examination of candidates for admission into the Medical Corps of the Army, and for such other business as the Surgeon-General may desire to bring before it. By Par. 9, S. O. 43, A. G. O., Hdqrs. of the Army, September 9, 1892.

Major Henry M. Cronkhite, Surgeon (Ft. Trumbull, Conn.), will proceed without delay to Sandy Hook, N. J., and take station at that place for duty with the Government employés thereat, under telegraphic instructions of this date from the War Department. This detail will continue during the encampment of civilians landed at Sandy Hook from infected vessels at quarantine in New York Harbor. S. O. 123, Hdqrs. Dept. of the East, Governor's Island, New York City, September 9, 1892.

First Lieut. Ashton B. Heyl, Asst. Surgeon U. S. A., granted leave of absence for fifteen days.

OFFICIAL LIST OF CHANGES in the Medical Corps of the U. S. Navy, for the Week Ending September 17, 1892.

P. A. Surgeon C. T. Hibbett, detached from receiving ship "Franklin," and wait orders.